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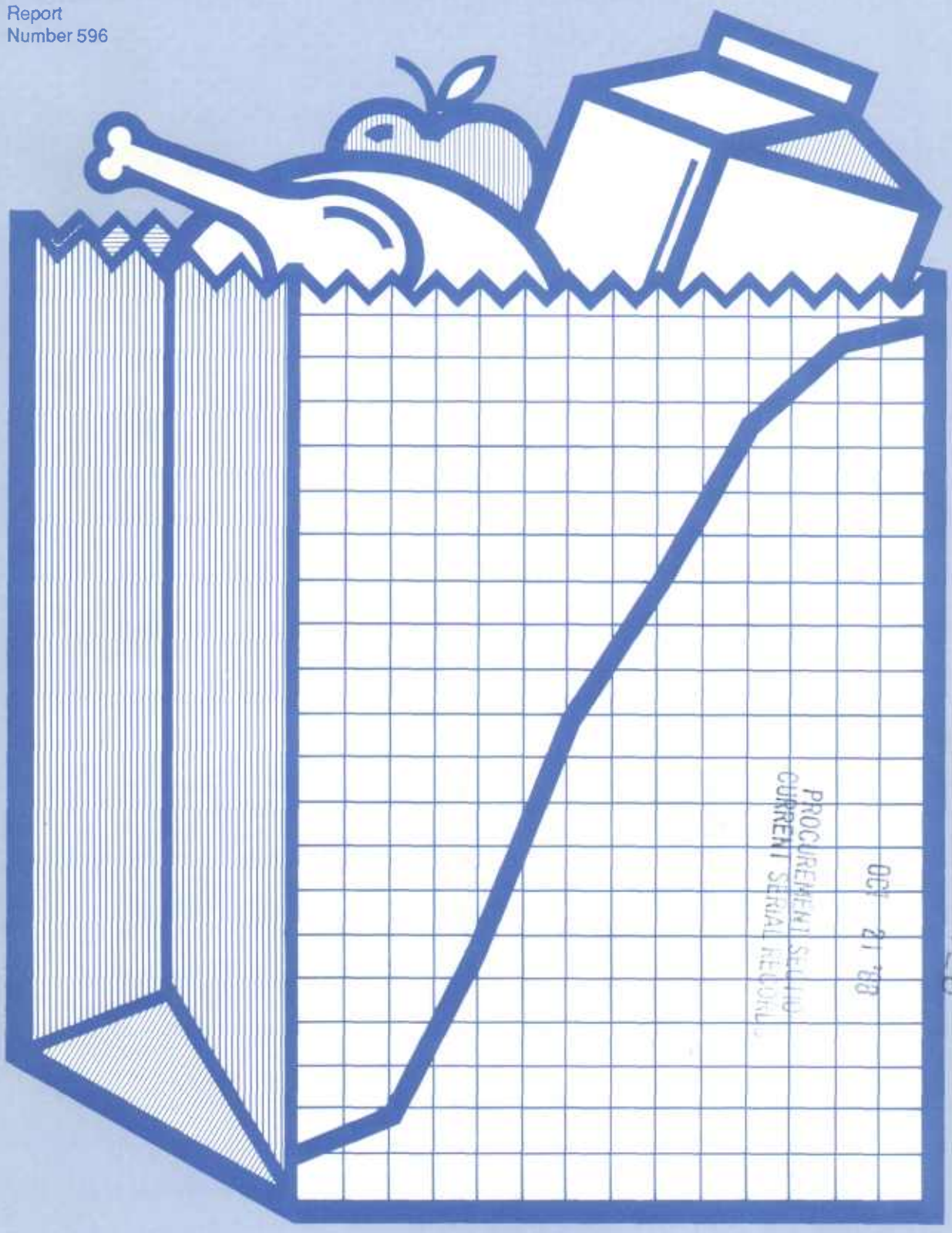
Food Cost Review, 1987

Denis Dunham



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FOOD COST REVIEW, 1987. By Denis Dunham, Commodity Economics Division, Economic Research Service, U.S. Department of Agriculture. Agricultural Economic Report No. 596.

ABSTRACT

Food prices, as measured by the Consumer Price Index, increased 4.1 percent in 1987, compared with a 3.2-percent rise in 1986. The larger rise reflected a 4.3-percent increase in prices of food bought in grocery stores for consumption at home compared with a 2.9-percent rise in 1986. The prices farmers received for commodities, as measured by the farm value of USDA's market basket of foods, rose 2.3 percent. Farm value of foods had dropped 8 percent the previous 2 years. The farm-to-retail price spread of USDA's market basket of foods rose by 6.2 percent, partly reflecting higher food industry labor costs from rising employment. Higher advertising, packaging, and other food marketing expenses also contributed to the rise in the farm-to-retail price spread.

KEYWORDS: Retail food prices, farm-to-retail price spread, farm value, food marketing costs, food spending, profit, productivity.

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Washington, DC 20005-4788 September 1988

CONTENTS

SUMMARY

Consumers paid 4.1-percent higher prices for food in 1987, as measured by the Consumer Price Index (CPI). This increase, outstripping the 3.2-percent rise in 1986, was the largest in 5 years. Food prices in grocery stores rose much more in 1987 than in 1986 mainly reflecting sharp price increases for meat and fresh fruits and vegetables.

Farm prices of food commodities, boosted by higher cattle prices, averaged higher in 1987, but the increase trailed the rise in retail food prices. The farm value of USDA's market basket of foods, based on prices farmers received, rose by 2.3 percent. Farm value had dropped 8 percent the previous 2 years. As a result, the 1987 farm value of foods was lower than in 1984 when smaller supplies of some commodities caused a rise in the farm value.

The farm value averaged 30 percent of the retail cost for a market basket of foods purchased in grocery stores, down from 31 percent in 1986 and 32 percent in 1985. The farm share of the food dollar has declined in recent years because abundant food supplies have held down farm prices while rising processing and distributing charges have boosted retail prices.

The farm-to-retail price spread rose 6 percent in 1987 due partly to higher packaging, advertising, and other input costs. There was also greater use of labor per unit of output. Employment in food retailing rose 2 percent, reflecting the trend toward buying more from service departments of supermarkets, such as instore bakeries and delicatessens. The increased price spread may also have reflected higher profit margins on food sales.

Consumers spent $377 billion for foods produced on U.S. farms, about 4.9 percent more than in 1986. This amount includes purchases of farm foods in foodstores, about 62 percent of the total, and at away-from-home eating places. About 25 percent of last year's food spending went back to farmers, who received about $94 billion. This share is lower than the 30-percent farm value share for the market basket of food because it includes the much lower 17-percent farm share for away-from-home food spending.

For food--	1986	1987
	Billion dollars	
Consumers spent...	360	377
Marketing bill was...	270	283
Farmers got...	90	94

The remaining $283 billion--the marketing bill--went to the food industry for handling, processing, and retailing foodstuffs after they left the farm. The marketing bill rose $13 billion in 1987. Direct labor costs for food marketing represented 46 percent of the marketing bill. Labor costs were about 40 percent larger than the farm value of food commodities.

Although the dollar amount spent for food has risen, food spending as a percentage of personal income has declined over the past decade. A declining portion of income spent for food leaves more money for other expenditures and for savings, and is an often-used indicator of a rising standard of living. In 1987, personal expenditures for food, as estimated by the Economic Research Service, were 12.1 percent of total personal disposable income, down from 13 percent 5 years earlier and 13.6 percent in 1977.

Food Cost Review, 1987

Denis Dunham*

INTRODUCTION

Consumers, farmers, and legislators want to know what causes food prices to change. They are also interested in the difference between what farmers get for the food they sell and how much consumers pay for that food, commonly referred to as the farm-to-retail price spread. To answer these concerns, Congress has directed the U.S. Department of Agriculture (USDA) to measure price spreads for foods originating on farms.

This report presents USDA's findings for 1987, including answers to the following questions:

How much did food prices rise in 1987? Why?

How much of the retail food price does the farm value represent?

How did farm-to-retail price spreads change last year, both for a market basket of foods and for representative foods such as Choice beef or bread?

How have recent developments affected food industry costs, profit margins, and productivity?

Finally, how much did Americans spend for farm-produced foods, and how were these dollars divided among costs of producing and marketing food?

RETAIL FOOD PRICES

Retail food prices averaged 4.1 percent higher in 1987 than in 1986 (fig. 1). That increase was the largest since 1982 when prices also rose 4.1 percent. But, last year's increase was much smaller than the 7.8-percent rise in 1981.

The general inflation rate, to which food price increases contribute, rose 3.6 percent. For the second consecutive year, food prices outpaced the general rate of increase. Before 1986, food prices rose less than the overall inflation rate for 7 consecutive years. Since 1978, food prices have risen 57.5 percent compared with a 74-percent rise in the general inflation rate.

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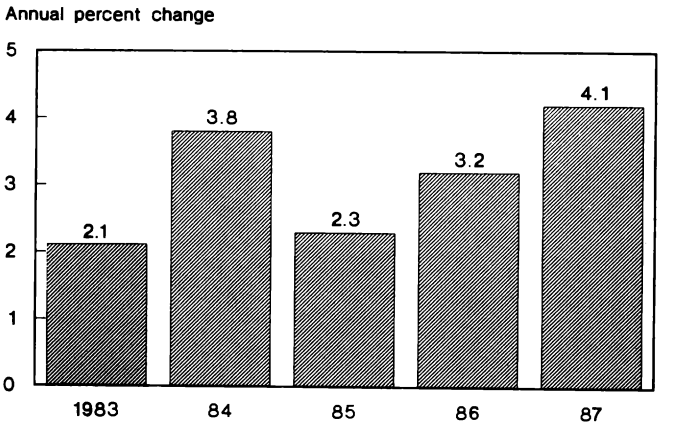
The 4.1-percent retail price rise for 1987 included both prices at foodstores and those paid at restaurants and other eating places. Prices of food at foodstores rose by more than those at eating places: 4.3 percent compared with 4 percent. Restaurant meal prices increased about the same amount as the year before. Food prices in foodstores rose much more. In 1986, prices in foodstores rose 2.9 percent (table 1). The larger rise in 1987 was mainly because prices of meat and fresh fruits and vegetables rose much more than in 1986.

Figure 1
Retail food prices



Consumer Price Index

These statistics came from the Consumer Price Index for urban consumers (CPI-U), published by the U.S. Department of Labor's Bureau of Labor Statistics (BLS). The CPI-U is the most widely accepted measure of changes in retail food prices. Prices used to develop the food CPI-U are collected in about 2,300 foodstores located in 85 urban areas.

After collection, BLS summarizes prices, weights them by their relative importance, and reports them as index numbers for about 70 food groups. The weights, reflecting the purchasing patterns of urban households, are revised periodically. BLS made the latest revision in January 1987, for changes in purchasing patterns between 1972-73 and 1982-84.

The food component of the overall CPI-U has a weight of about 16 percent; housing is the largest expenditure category with 43 percent of the CPI-U weight, followed by transportation with 17 percent. The food category of the CPI-U has two major components: food purchased in foodstores for consumption at home which has a weight of about 10 percent, and food consumed away from home, about 6 percent (table 2).

Knowing the importance of CPI-U components helps one understand how price changes for various food groups influence the overall change in the CPI-U for food. For instance, in the food-at-home CPI-U, meats consisting of beef, pork, and other meats are the largest major food category. Last year, the CPI-U for meats went up 7.5 percent which accounted for about 37 percent of the increase in the food-at-home CPI-U.

Retail Prices of Most Foods Rose

Although prices of most foods at the supermarket averaged higher in 1987, price changes varied widely among the various food groups. Red meat prices, which account for 21 percent of the CPI-U's index for food consumed at home, increased 7.5 percent. Poultry prices averaged slightly lower, but fish and seafood prices jumped 10.6 percent. Fresh fruit and vegetable prices soared 12.2 percent in 1987. Prices of cereals, baked goods, and other highly processed foods rose 3-4 percent. Prices were unchanged or lower for some staple foods, including a pound of ground beef, sugar, flour, and a loaf of bread (table 3).

Table 1--Consumer price indexes for food and percentage change from previous year

Year	Food		Food at home		Food away from home	
	Index	Change	Index	Change	Index	Change
	1982-84=100	Percent	1982-84=100	Percent	1982-84=100	Percent
1950	25.4	1.6	27.3	1.5	--	--
1951	28.2	11.0	30.3	11.0	--	--
1952	28.7	1.8	30.8	1.7	--	--
1953	28.3	-1.4	30.3	-1.6	21.5	--
1954	28.2	-.4	30.1	-.7	21.9	1.9
1955	27.8	-1.4	29.5	-2.0	22.1	.9
1956	28.0	.7	29.6	.3	22.6	2.3
1957	28.9	3.2	30.6	3.4	23.4	3.5
1958	30.2	4.5	32.0	4.6	24.1	3.0
1959	29.7	-1.7	31.2	-2.5	24.8	2.9
1960	30.0	1.0	31.5	1.0	25.4	2.4
1961	30.4	1.3	31.8	1.0	26.0	2.4
1962	30.6	.7	32.0	.6	26.7	2.7
1963	31.1	1.6	32.4	1.3	27.3	2.2
1964	31.5	1.3	32.7	.9	27.8	1.8
1965	32.2	2.2	33.5	2.4	28.4	2.2
1966	33.8	5.0	35.2	5.1	29.7	4.6
1967	34.1	.9	35.1	-.3	31.3	5.4
1968	35.3	3.5	36.3	3.4	32.9	5.1
1969	37.1	5.1	38.0	4.7	34.9	6.1
1970	39.2	5.7	39.9	5.0	37.5	7.4
1971	40.4	3.1	40.9	2.5	39.4	5.1
1972	42.1	4.2	42.7	4.4	41.0	4.1
1973	48.2	14.5	49.7	16.4	44.2	7.8
1974	55.1	14.3	57.1	14.9	49.8	12.7
1975	59.8	8.5	61.8	8.2	54.5	9.4
1976	61.6	3.0	63.1	2.1	58.2	6.8
1977	65.5	6.3	66.8	5.9	62.6	7.6
1978	72.0	9.9	73.8	10.5	68.3	9.1
1979	79.9	11.0	81.8	10.8	75.9	11.1
1980	86.8	8.6	88.4	8.1	83.4	9.9
1981	93.6	7.8	94.8	7.2	90.9	9.0
1982	97.4	4.1	98.1	3.5	95.8	5.4
1983	99.4	2.1	99.1	1.0	100.0	4.4
1984	103.2	3.8	102.8	3.7	104.2	4.2
1985	105.6	2.3	104.3	1.5	108.3	3.9
1986	109.0	3.2	107.3	2.9	112.5	3.9
1987	113.5	4.1	111.9	4.3	117.0	4.0

-- = Not available.

Source: U.S. Department of Labor, Bureau of Labor Statistics.

Table 2--Relative importance of food groups in Consumer Price Index for urban consumers, December 1987

Food group	Weight in CPI-U	Weight in food CPI-U	Weight in food-at-home CPI-U
		Percent	
Food	16.055	100.0	NA
Food at home	9.864	61.4	100.0
Cereals and bakery products	1.351	8.4	13.7
Cereal products	.430	2.7	4.4
Bakery products	.921	5.7	9.3
Meats	2.067	12.9	21.0
Beef and veal	1.033	6.5	10.5
Pork	.615	3.8	6.2
Other meats	.419	2.6	4.3
Poultry	.427	2.7	4.3
Fish and seafood	.393	2.4	4.0
Eggs	.148	.9	1.5
Dairy products	1.229	7.7	12.5
Fresh milk and cream	.609	3.8	6.2
Processed dairy products	.620	3.9	6.3
Fresh fruits and vegetables	1.149	7.1	11.6
Fresh fruits	.546	3.4	5.5
Fresh vegetables	.603	3.7	6.1
Processed fruits and vegetables	.638	4.0	6.5
Processed fruits	.370	2.3	3.8
Processed vegetables	.268	1.7	2.7
Sugar and sweets	.349	2.2	3.5
Fats and oils	.259	1.6	2.6
Nonalcoholic beverages	.821	5.1	8.3
Other prepared foods	1.033	6.4	10.5
Food away from home	6.192	38.6	NA

NA = Not applicable.
Source: U.S. Department of Labor, Bureau of Labor Statistics.

Table 3--Average retail food prices, individual items

Item	Unit	1984	1985	1986	1987
		Dollars			
Cereals and bakery products:					
Flour, white	Pound	0.22	0.21	0.21	0.20
Rice, white, uncooked	do.	.48	.47	.45	.40
Bread, white	do.	.54	.55	.56	.55
Bread, french	do.	1.01	1.02	1.05	1.08
Bread, whole wheat	do.	.88	.86	.87	.88
Rolls, hamburger	do.	.80	--	--	--
Cupcakes, chocolate	do.	2.04	2.10	2.30	--
Cookies, chocolate chip	do.	1.87	1.94	1.99	2.00
Crackers, soda	do.	.96	1.02	.99	1.00
Meats:					
Chuck, ground	do.	1.72	1.68	1.63	1.63
Chuck roast	do.	1.68	1.57	1.58	1.68
Round roast	do.	2.58	2.46	2.44	2.53
Rib roast	do.	3.35	3.28	3.26	3.54
Round steak	do.	2.91	2.82	2.77	2.88
Sirloin steak	do.	3.08	2.96	2.96	3.13
Chuck steak	do.	1.71	1.64	1.58	1.45
T-bone steak	do.	3.95	3.97	3.97	4.24
Porterhouse steak	do.	4.06	4.04	4.14	--
Bacon, sliced	do.	1.86	1.94	2.08	2.14
Chops, center cut	do.	2.38	2.34	2.59	2.82
Ham, rump	do.	1.32	1.28	1.47	1.54
Sirloin roast	do.	1.65	1.59	2.00	1.90
Shoulder picnic	do.	1.01	1.02	1.06	1.11
Sausage	do.	1.71	1.74	1.91	1.99
Ham, canned	do.	2.56	2.56	2.68	2.80
Frankfurters	do.	1.80	1.81	1.93	1.99
Bologna	do.	2.13	2.11	2.17	2.19
Poultry:					
Chicken, fresh	do.	.81	.76	.84	.78
Chicken breast	do.	1.70	1.66	1.85	1.80
Chicken legs	do.	1.15	1.08	1.17	1.09
Turkey	do.	.99	1.05	1.07	1.01
Fish:					
Tuna, canned	do.	2.12	2.01	2.00	1.97
Eggs:					
Grade A, large	Dozen	1.00	.80	.87	.78
Grade AA, large	do.	1.03	.90	.98	.93
Dairy:					
Milk, fresh	1/2 gal	1.13	1.13	1.11	1.14
Milk, low fat	1/2 gal	1.07	1.08	1.08	1.08
Butter	Pound	2.11	2.12	2.15	2.17
Ice cream	1/2 gal	2.22	2.30	2.36	2.46
Yogurt	1/2 pt	.53	.57	.58	.58
Cheese, cheddar	Pound	3.06	3.09	3.05	3.06

Item	Unit	1984	1985	1986	1987
		Dollars			
Fresh fruits:					
Apples, red delicious	Pound	0.66	0.68	0.77	0.73
Bananas	do.	.36	.37	.38	.36
Oranges, navel	do.	.42	.53	.48	.54
Oranges, Valencia	do.	.65	.54	.46	.58
Cherries	do.	1.25	1.62	1.27	1.35
Grapefruit	do.	.40	.47	.51	.52
Grapes, Emperor or Tokay	do.	1.00	1.04	.89	.98
Grapes, Thompson seedless	do.	1.10	.94	1.14	1.17
Lemons	do.	.75	.93	.82	.90
Peaches	do.	.57	.69	.68	.67
Pears, Anjou	do.	.54	.70	.75	.74
Strawberries	12 oz	.80	.83	.83	.96
Fresh vegetables:					
Potatoes, white	Pound	.24	.21	.24	.28
Lettuce, iceberg	do.	.51	.54	.53	.62
Tomatoes, field grown	do.	.81	.78	.82	.82
Beans, green	do.	.89	.82	.87	.94
Cabbage	do.	.36	.29	.31	.30
Carrots	do.	.39	.36	.38	.36
Celery	do.	.48	.42	.47	.46
Corn on the cob	do.	.43	.39	.41	.42
Cucumbers	do.	.52	.51	.51	.57
Onions, yellow	do.	.37	.30	.31	.42
Onions, green	do.	1.23	1.22	1.12	1.24
Peppers, sweet	do.	.89	.94	.90	.90
Radishes	do.	.80	.76	.85	.83
Processed fruits and vegetables:					
Orange juice, frozen concentrate	16 oz	1.62	1.75	1.54	1.53
Potatoes, frozen, french fried	Pound	.67	.71	.70	.69
Tomatoes, canned	do.	.52	.52	.52	.51
Fats and oils:					
Margarine, tub	do.	1.01	1.02	1.02	.97
Margarine, stick	do.	.78	.80	.79	.69
Shortening	do.	.92	.88	.87	.78
Peanut butter	do.	1.49	1.54	1.60	1.80
Other foods:					
Potato chips	do.	2.57	2.61	2.68	2.75
Sugar, white	do.	.36	.35	.35	.35
Nonalcoholic beverages:					
Coffee, roasted	do.	2.58	2.58	3.43	2.78
Cola, nondiet, cans	16 oz	.49	.49	.47	.44

-- = Not available.
Source: U.S. Department of Labor, Bureau of Labor Statistics.

Here's a wrapup of price changes at the supermarket in 1987.

Meat. Prices of beef and veal averaged 7.6 percent higher in 1987, the largest increase since 1982. However, there was little change in beef prices from 1980 to 1986. Last year, beef production declined about 3 percent, raising prices.

For the second consecutive year, retail pork prices rose 8.2 percent. Lower pork production much of the year and the smaller supply of beef contributed to the sharply increased prices. Fourth-quarter increases in pork production brought prices down from record highs earlier in the year.

Poultry and Eggs. Despite a 10-percent increase in production, retail poultry prices averaged only 1.4 percent lower in 1987, reflecting strong consumer demand. Demand for broiler chicken was strengthened by rising beef and pork prices and a growing market for poultry parts and highly processed products. Poultry consumption increased to about 78 pounds per person in 1987, almost 6 pounds more than in 1986.

Egg prices averaged 6.9 percent lower in 1987 than in 1986. Egg prices declined because lower production costs encouraged producers to increase production last year although there has been a long-term decline in egg consumption.

Dairy Foods. Retail prices of milk and other dairy products averaged 2.5 percent higher in 1987. However, for the seventh straight year, retail dairy prices went up less than the average price of all other foods purchased for use at home. Prices of fresh milk and cream went up 2.2 percent, and prices of cheese, ice cream, and other processed dairy products rose 2.7 percent. Falling real prices and heavy promotion increased use of dairy products by about 1 percent, extending the upturn in consumption that began in the early 1980's.

Fish and Seafood. Prices of seafood increased 10.6 percent above 1986 levels, more than most other major food components of the CPI-U. Strong demand for seafood may partly explain the rise in prices. Per capita consumption of fish and seafood was 15.4 pounds in 1987, up from 14.7 pounds in 1986.

Cereals and Bakery Products. Prices of cereals and baked goods rose by 3.5 percent. A relatively large 5.8-percent increase for cereals reflects rising sales due to growing consumer demand for products that are perceived to be nutritionally beneficial and convenient to use. Large supplies and low prices for wheat, rice, and other food grains held down ingredient costs in 1987. Lower raw product prices, however, hardly affected retail prices because about 90 percent of the retail price of cereals and baked goods pays processing and marketing costs.

Processed Fruits and Vegetables. Processed fruit and vegetable prices in 1987 averaged 3.5 percent higher than 1986 prices. Prices for most processed fruit rose, but prices of frozen concentrated orange juice, the sales leader, were slightly lower. Prices for processed vegetables rose 2.8 percent as supplies were adequate to meet demand.

Fats and Oils. The fats and oils component of the food CPI-U averaged 1.5 percent higher in 1987. However, retail prices for shortening and margarine

averaged 10-12 percent lower in 1987 reflecting excessive supplies of soybean and other vegetable oils. Retail prices for peanut butter increased about 13 percent. Peanut supplies in 1987 were down 18 percent because of a 1986 drought.

Nonalcoholic Beverages. Retail prices of beverages averaged 2.6 percent lower in 1987. Coffee prices dropped 12 percent following a sharp price rise in 1986 after a severe drought in Brazil. Retail prices of carbonated drinks rose 2 percent.

Fresh Fruits and Vegetables. Fresh fruit prices averaged about 11 percent higher in 1987. Orange prices were 25 percent above 1986 when prices had significantly declined. The higher orange prices resulted from reduced supplies for the fresh market and stronger demand, particularly for overseas sales of fresh oranges. Apple prices were sharply higher during the first half, but a record-large harvest dropped prices in the fall.

Fresh vegetable prices rose 13 percent. Lettuce prices were up about 21 percent, mainly because of rains and pest infestations in California that sharply cut supplies in November and December. A smaller potato harvest in 1986, down 11 percent from 1985, boosted retail potato prices by 21 percent in 1987. Prices of other fresh vegetables also were higher, including a 5-percent rise in tomato prices.

Food Consumption Stable

Preliminary estimates indicate that total food consumption was unchanged in 1987 as measured by USDA's per capita food consumption index. This index, calculated from pounds of food and retail prices in a base year, did not increase last year, although Americans consumed more poultry, dairy products, and fruits and less red meat (table 4). The index includes most foods, but it does not represent total food use because data are not available for some fruits and vegetables and other products. Food consumption has been relatively stable over the long term, increasing by only about 5.5 percent during 1967-83. Food consumption data are derived from information on supply and use of farm products and, therefore, are not direct measures of consumption. Rather, they measure disappearance of food from commercial channels. 1/

Beef and veal consumption declined to 75 pounds per person on a retail weight basis in 1987. However, pork consumption rose slightly to 59 pounds per person. Per capita poultry consumption continued its long upward trend, increasing about 6 pounds to 78 pounds. The use of dairy products rose because of higher consumption of cheese and low-fat milk products. Per capita consumption of most crop products was relatively stable but flour and cereal consumption increased.

Consumers have been altering their consumption of major food groups. Over the past decade, red meat consumption dropped 17 pounds per person. Beef and veal consumption fell 19 pounds per person from 1977 to 1987, but pork consumption rose slightly. In contrast, poultry consumption jumped 25 pounds. This

1/ For more detailed and historical information, see U.S. Department of Agriculture, Economic Research Service, Food Consumption, Prices, and Expenditures, 1986-87, forthcoming.

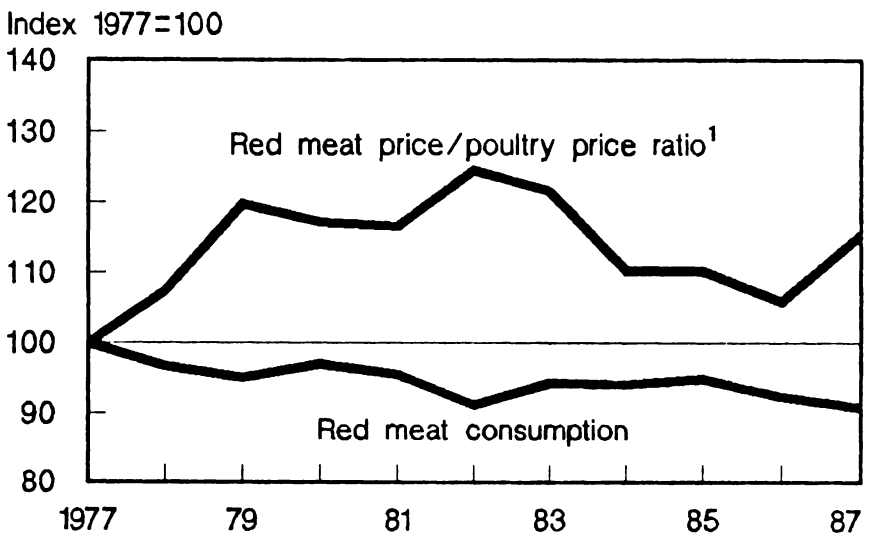
Table 4--Annual per capita food consumption, retail weight equivalent

Food group	1977	1984	1985	1986	1987 1/
			1967=100		
Aggregate food consumption index	105.5	106.8	109.2	109.0	109.0
			Pounds per capita		
Red meat	152	143	144	140	135
Beef and veal	94	80	81	80	75
Pork	56	62	62	58	59
Poultry	53	67	70	72	78
Eggs	34	33	32	32	32
Dairy products, milk equivalent	541	581	593	591	598
Flour and cereal products	139	142	148	152	161
Fats and oils, including butter	56	62	67	67	66
Fresh fruits	79	88	86	92	97
Fresh vegetables 2/	68	78	78	79	77
Sugars and sweeteners, caloric	127	126	131	129	132

1/ Preliminary. 2/ Data are for lettuce, tomatoes, onions, carrots, celery, corn, broccoli, asparagus, and cauliflower.

Figure 2

Consumers eat less red meat as it becomes relatively more expensive than poultry



1/ This ratio represents the relative change in red meat and poultry prices from 1977 We determined that red meat cost 19.8 percent more than poultry in 1979 (compared with 1977) by dividing 138.8 (red meat index) by 115.9 (poultry index).

change in consumption patterns was partly in response to the changes in relative prices. During the 10-year period, red meat prices increased by 69 percent, whereas poultry went up 46 percent. Therefore, poultry prices declined about 14 percent in relation to red meat which coincides with rising consumption of poultry and a decline in red meat consumption (fig. 2).

Per capita egg consumption hit a record low in 1985, but consumption leveled off in 1986-87. Dairy product consumption held fairly stable during the 1970's, but declining real prices and expanded promotion since 1983 have boosted use at an unprecedented rate. Consumption in 1987 was about 4 percent above 1983.

Among crop foods, per capita consumption of fresh fruit rose 15 pounds during 1977-87. The increase is due to expanded consumption of such noncitrus fresh fruit as grapes and bananas. Consumption of eight major commercial fresh vegetables rose 12 pounds per person from 1977 to 1987, mainly reflecting rising consumption of fresh tomatoes, lettuce, onions, and broccoli. Consumption of fats and oils increased 10 pounds per person since 1977, reaching 66 pounds last year. Sugar and sweetener consumption rose from 127 pounds per person in 1977 to 132 pounds in 1987.

MARKET BASKET PRICES

To better understand why grocery store food prices increased last year, we consider separately what happened to the prices of foods that mainly originate on U.S. farms (87 percent of consumer food purchases at the foodstore) and what happened to prices of nonalcoholic beverages and fish and seafood products (13 percent of consumer food purchases at the foodstore).

USDA uses its market basket concept to track price changes for the commodities that farmers sell and the foods that consumers buy in retail foodstores. The market basket contains the average quantities of domestically produced food purchased for consumption at home in a base period. Changes in retail prices of the market basket are components of the CPI-U for food consumed at home.

The 4.3-percent rise in food at home was mainly the result of a 5-percent increase in prices of domestically produced foods. Prices of beverages declined 2.6 percent, but prices of fish and seafood went up 10.6 percent.

To study the reasons for changes in prices of domestically produced foods, USDA divides the retail cost for a market basket of foods into the farm value and the farm-to-retail price spread (table 5). The farm value represents prices farmers receive for raw commodities equivalent to foods in the market basket. The farm-to-retail price spread represents the difference between the retail price and the farm value. The price spread includes the charges for assembling foods from farms, processing, distributing, and retailing foods. In 9 of the past 10 years, a rise in the farm-to-retail price spread contributed more to the rise in food prices than did changes in the farm value.

Retail food prices do not always correspond to changes in farm value, such as in 1987, for several reasons. A lag in price adjustment may reflect retail merchandising practices designed to maximize total store sales and profits rather than sales and profit item by item. For instance, low margins in the meat department may be offset by raising margins in other departments. This pricing practice may allow retailers to avoid frequently changing prices.

Table 5--Indexes of retail price, farm value, and the farm-to-retail price spread and farm value as a share of retail price 1/

Year	Retail price	Farm value	Farm-to-retail spread	Farm value share of retail price
	1982-84=100			Percent
1950	30	40	25	47
1951	33	46	26	49
1952	34	44	28	47
1953	32	41	28	45
1954	32	39	28	43
1955	31	36	29	41
1956	32	36	29	40
1957	33	37	30	40
1958	35	40	32	41
1959	34	37	32	39
1960	34	38	32	39
1961	34	37	33	39
1962	34	38	33	39
1963	34	36	33	38
1964	34	36	34	36
1965	35	40	33	38
1966	37	43	34	39
1967	37	40	35	39
1968	38	42	36	38
1969	40	46	37	39
1970	42	46	40	37
1971	43	46	41	37
1972	45	50	42	38
1973	52	68	44	44
1974	60	73	53	42
1975	64	76	58	40
1976	65	72	61	38
1977	66	72	63	37
1978	74	83	68	38
1979	82	92	77	38
1980	88	97	83	37
1981	95	99	92	36
1982	98	99	98	35
1983	99	97	100	34
1984	103	104	103	35
1985	104	96	108	32
1986	106	95	112	31
1987 2/	112	97	119	30

1/ For a market basket of foods bought in foodstores in a base period, currently 1982-84. The retail price index is derived from BLS data. Farm value is based on prices received by farmers for commodities. The spread between the retail price and farm value represents charges for processing and marketing. 2/ Preliminary.

Changes in farm commodity prices may not show up quickly at the retail level because processors and wholesalers may allow inventories to fluctuate before changing prices to retailers. Storing food smoothes out sudden changes in product availability and lessens necessary price adjustments. Retail food prices must also reflect costs not related to farm prices or supplies. A decrease in farm value may be partially, completely, or more than offset by increases in processing and marketing costs.

Farm Value

Farm value is a measure of the return, or payment, received by farmers for the farm products equivalent to retail foods sold to consumers. Market basket farm value serves as an index of prices farmers receive for products later used for food. Farm values for individual food items are expressed in dollar amounts for comparison with the item's retail price. Farm value is calculated by multiplying farm prices by the quantities of farm products equivalent to foods sold at retail. An allowance is made in farm values if byproducts are obtained in processing. The farm value usually represents a larger quantity than the retail unit because the foodstuffs farmers produce lose weight as they are stored, processed, and distributed.

The farm product equivalent varies among foods. Only a slight amount of raw milk is lost, for example, as it is handled and processed for sale in cartons to consumers. Therefore, the farm value of the retail price per half-gallon is just a little more than the price that milk producers receive per half-gallon. In contrast, nearly 2.4 pounds of live animal are needed to yield 1 pound of Choice beef on the meat counter. The payment the cattle producer receives for that larger quantity of live animal is the gross farm value in the price of 1 pound of retail beef.

The farm value of foods in the market basket averaged 2.3 percent higher in 1987, almost entirely due to higher prices for cattle and fruits and vegetables. Farm value had dropped over 8 percent the previous 2 years. As a result, the 1987 farm value was lower than in 1984 when smaller supplies of some commodities boosted the farm value of the market basket.

Farmers received about 7 percent more for red meat in USDA's market basket in 1987 than in 1986 (table 6). The increase was mainly due to a rise in cattle prices that resulted from a 3-percent decline in production. The cutback in output pushed up prices of Choice grade steers at Omaha to an average of $64.60 per hundredweight, compared with $57.75 in 1986. At the supermarket, 1 pound of Choice grade beef sold for $2.42 in 1987 (table 7). Cattle producers received $1.38 for the equivalent quantity of live animal (2.4 pounds), 14 cents more than in 1986.

Higher grower prices for some fruits and vegetables also increased the farm value of the market basket. Farm values rose 24 percent for fresh vegetables, due in large part to relatively high lettuce and potato prices. Farm value rose 9 percent for processed fruits and vegetables, reflecting higher orange, potato, and dry bean prices. Florida grower prices for processing oranges averaged $4.69 per 90-pound box (equivalent ontree returns) during the 1986/87 season, 22 percent higher than the previous season.

Slightly higher producer prices for milk used in fluid products raised the farm value of dairy products. A half-gallon of fluid milk retailing for $1.14 returned the producer about 56 cents, 1 cent more than in 1986.

Farm values were lower for many commodities, including both poultry and eggs. Farm value of poultry dropped about 18 percent, reflecting a 9-percent increase in production. Broiler chicken producers received 41 cents of the average retail price of 78 cents per pound of frying chicken, about 6 cents less than in 1986. Egg producers received 48 cents for a dozen eggs selling for 78 cents in the store, 6 cents less than in 1986.

The farm value of fats and oils declined 3 percent, mainly because of lower prices for soybean oil, the principal oil used in shortening and margarine. The farm value of cereals and baked goods fell 7 percent, reflecting a decline in prices of wheat, corn, and rice. Farmers received only 3.3 cents for the wheat in a 1-pound loaf of white bread selling for 55 cents in supermarkets, 0.2 cent less than in 1986. The farm value of other bread ingredients, mainly shortening and sweeteners, was 0.5 cent, unchanged from 1986.

Farm Value Share of Food Dollar

The farm value averaged 30 percent of the retail price of all foods in the market basket in 1987, compared with 31 percent in 1986 (table 5). The lower farm value share reflected the smaller rise in farm value than in retail prices. Farm value share of the retail cost of food averaged 38-40 percent most years during the 1960's and 1970's but has trended down since 1979 because farm prices have not increased but retail prices have continued to rise, reflecting higher processing and marketing charges. The size of the farm value share is not a direct measure of the welfare of producers, but a decrease often accompanies a decline in farm income. In 1987, net farm income increased, but mainly because of higher Government payments.

Farm value as a share of the retail price varies greatly among foods (table 7). Farm value is a much larger percentage of the retail price of eggs, beef, chicken, and milk than for most other foods. Thus, changes in prices received by farmers for these commodities usually affect retail food prices the most. For example, lower farm prices for eggs and poultry caused a decrease in retail egg and poultry prices. Cattle prices also went up, and retail beef prices rose. In contrast, retail pork prices went up, although hog prices were nearly steady, resulting in a wider farm-to-retail price spread.

The farm value of most foods that come from grains, oilseeds, and fruits and vegetables represents a small share of the retail price. Last year, farmers received about 8 percent of bakery and cereal prices, and 18 percent of retail prices of fats and oils (table 8). Thus, declines in the farm value for these foods were not accompanied by lower retail prices. For example, even though the farm value of grain commodities used in cereals and baked goods fell about 7 percent (representing 0.6 percent of the retail price, based on an 8-percent share), retail prices of these foods rose 3.5 percent, reflecting increases in marketing charges.

Farm-to-Retail Price Spread

The farm-to-retail price spread is the difference between farm value and retail price. It represents payments for all assembling, processing, transporting, and retailing charges added to the value of farm products after they leave the farm.

The farm-to-retail spread for the market basket of food averaged about 6 percent higher in 1987, a much larger increase than in 1986. Since the farm

Table 6--Price changes for market basket of foods 1/

Item	1983	1984	1985	1986	1987 2/
		Annual percentage change			
Market basket:					
Retail price	0.9	3.9	1.2	2.1	5.0
Farm value	-1.7	6.3	-7.1	-1.4	2.3
Farm-to-retail spread	2.5	2.7	5.6	3.7	6.2
Meat products:					
Retail price	-1.2	.3	-.9	3.1	7.5
Farm value	-6.2	2.4	-8.2	3.3	7.3
Farm-to-retail spread	4.3	-1.7	6.4	2.9	7.7
Dairy products:					
Retail price	1.2	1.3	1.9	.1	2.5
Farm value	.1	-1.2	-4.1	-2.8	.8
Farm-to-retail spread	2.3	3.7	7.1	2.6	3.7
Poultry:					
Retail price	1.3	10.6	-1.0	7.5	-1.4
Farm value	5.9	16.8	-6.0	8.7	-18.5
Farm-to-retail spread	-3.7	3.6	5.4	6.3	18.4
Eggs:					
Retail price	4.7	11.7	-16.6	6.8	-5.9
Farm value	8.9	11.2	-22.2	7.8	-16.9
Farm-to-retail spread	-2.4	12.9	-6.5	5.6	11.2
Cereal and bakery products:					
Retail price	3.2	4.3	3.8	2.8	3.5
Farm value	5.5	1.7	-8.4	-19.1	-6.9
Farm-to-retail spread	2.8	4.8	5.5	5.4	4.5
Fresh fruit:					
Retail price	-5.9	13.6	11.1	1.7	12.6
Farm value	-23.8	41.2	-2.6	-6.3	9.7
Farm-to-retail spread	3.0	3.4	17.9	5.1	13.8
Fresh vegetables:					
Retail price	3.6	10.9	-4.3	4.1	12.9
Farm value	2.2	11.8	-14.0	-3.3	24.4
Farm-to-retail spread	4.3	10.5	-.6	7.3	8.3
Processed fruit and vegetables:					
Retail price	1.0	6.0	2.6	-1.6	3.5
Farm value	-6.4	14.3	10.2	-13.8	9.5
Farm-to-retail spread	3.5	3.4	.3	2.6	1.8
Fats and oils:					
Retail price	1.4	9.4	2.2	-2.2	1.5
Farm value	21.0	29.2	-16.1	-27.0	-2.8
Farm-to-retail spread	-4.2	2.5	10.4	6.3	2.6
Other prepared food:					
Retail price	3.1	3.0	3.3	2.6	4.2
Farm value	2.3	3.7	-6.7	4.7	2.3
Farm-to-retail spread	3.3	2.9	4.9	2.3	4.5

1/ Changes in retail prices are from the Consumer Price Index published by the U.S. Department of Labor, Bureau of Labor Statistics. The farm value is based on prices received by farmers for commodities equivalent to foods at retail. The spread between the retail price and farm value represents charges for processing and marketing. Some historical data have been revised.

2/ Preliminary.

value increased much less, the increase in the farm-to-retail spread accounted for most of the 5-percent rise in the retail cost of the market basket.

The increase in the spread resulted largely from higher prices of most inputs used in the food industry, greater use of some inputs per unit of output (such as labor in food retailing and more advertising) and increases in profit margins of some retail foodstores, wholesalers, and manufacturers.

The farm-to-retail price spread widened most in the first quarter of 1987 when farm value fell sharply. The price spread was steady in the second quarter when farm value significantly rose, reflecting higher livestock prices, but the spread further widened in the third and fourth quarters.

Price Spreads for All Food Groups Widen

The farm-to-retail price spread increased 2-18 percent for all major food groups in 1987 (table 6). The farm-to-retail spread for red meats rose by 7.7 percent, more than twice as much as in 1986. However, the price spread for Choice beef declined slightly from a record-high level in 1986 because higher cattle prices were not fully reflected in retail meat prices. The price

Table 7--Farm value share of retail prices of selected foods, 1987

Item	Retail price	Farm value	Farm-to-retail spread	Farm value share of retail price 1/
	----------Dollars----------			Percent
Eggs, Grade A large, 1 dozen	0.78	0.48	0.30	62
Choice beef, 1 lb	2.42	1.38	1.04	57
Chicken, broiler, 1 lb	.78	.41	.37	52
Milk, 1/2 gal	1.14	.56	.58	49
Pork, 1 lb	1.88	.83	1.05	44
Frozen orange juice, 12 fluid oz	1.11	.42	.69	37
Cheese, natural cheddar, 1 lb	3.06	1.10	1.96	36
Sugar, 1 lb	.34	.12	.22	35
Potatoes, Northeast, 10 lbs	2.40	.62	1.78	26
Peanut butter, 1 lb	1.80	.46	1.34	26
Flour, wheat, all purpose, 5 lbs	1.02	.27	.75	26
Shortening, 3-lb can	2.33	.44	1.89	19
Oranges, California, 1 lb	.55	.10	.45	18
Margarine, 1 lb	.69	.12	.57	17
Lettuce, 1 lb	.59	.10	.49	17
Rice, long grain, 1 lb	.40	.06	.34	15
Potatoes, frozen, french fried, 1 lb	.69	.08	.61	12
Tomatoes, 1-lb can	.51	.05	.46	9
White bread, 1 lb	.55	.04	.51	7

1/ Computed from unrounded data.

Table 8--Market basket of food products originating on U.S. farms by food group: Index of retail cost, farm value, and farm-to-retail price spread, and farm value share of retail cost 1/

Year	Meat products				Poultry				Eggs			
	Retail cost	Farm value	Farm-to-retail spread	Farm value share	Retail cost	Farm value	Farm-to-retail spread	Farm value share	Retail cost	Farm value	Farm-to-retail spread	Farm value share
	-----1982-84=100-----			Percent	----1982-84=100-----			Percent	-----1982-84=100-----			Percent
1965	36	41	30	59	50	51	49	57	55	53	60	62
1966	38	44	34	58	52	53	53	53	63	65	50	66
1967	37	41	34	56	49	45	54	49	52	48	60	59
1968	38	42	34	54	51	48	54	57	56	54	61	61
1969	41	48	36	56	53	51	57	51	66	68	62	67
1970	44	47	40	53	53	46	61	46	65	63	68	63
1971	43	46	40	52	54	47	60	47	56	50	68	57
1972	48	55	42	56	54	49	60	49	56	50	67	57
1973	60	74	46	60	76	84	68	59	84	90	71	70
1974	61	67	55	54	72	76	69	56	84	87	76	68
1975	66	77	56	57	80	88	71	59	82	83	77	66
1976	66	70	63	53	76	79	75	55	90	97	81	68
1977	65	70	60	53	77	81	74	56	87	87	90	64
1978	77	85	69	54	85	92	76	58	82	83	81	65
1979	90	97	84	52	89	92	86	55	90	93	85	66
1980	93	96	89	51	94	96	91	55	89	88	89	64
1981	96	97	95	49	97	95	100	52	96	99	90	66
1982	101	104	98	52	96	91	101	51	93	91	97	63
1983	99	97	102	49	97	96	98	53	98	99	95	65
1984	100	99	100	50	107	113	101	56	109	110	107	65
1985	99	91	107	47	106	106	107	53	91	86	100	61
1986	102	94	110	47	114	115	113	54	97	92	106	61
1987	110	101	118	47	113	94	134	45	92	77	118	54

See footnotes at end of table.

--Continued

Table 8--Market basket of food products originating on U.S. farms by food group: Index of retail cost, farm value, and farm-to-retail price spread, and farm value share of retail cost 1/--Continued

Year	Dairy products 2/				Fats and oils 3/				Fresh fruits			
	Retail cost	Farm value	Farm-to-retail spread	Farm value share	Retail cost	Farm value	Farm-to-retail spread	Farm value share	Retail cost	Farm value	Farm-to-retail spread	Farm value share
	-----1982-84=100-----			Percent	----1982-84=100-----			Percent	-----1982-84=100-----			Percent
1965	36	33	40	44	35	41	34	31	29	35	27	31
1966	38	37	40	47	37	44	34	32	31	38	28	32
1967	40	38	42	47	37	38	37	28	31	37	28	31
1968	41	40	42	47	36	34	36	26	36	49	32	35
1969	43	42	43	48	36	35	36	26	35	41	32	31
1970	45	44	45	48	38	42	37	30	35	37	34	28
1971	46	44	47	47	42	49	39	32	37	43	35	30
1972	47	46	47	48	43	42	43	27	39	45	37	30
1973	51	52	49	50	47	66	40	38	45	57	41	33
1974	61	61	59	49	71	124	52	47	49	56	47	30
1975	63	63	61	50	77	97	69	34	50	59	47	30
1976	68	71	64	52	66	79	60	32	51	55	49	28
1977	70	72	68	50	71	95	62	36	60	65	55	29
1978	74	77	71	51	78	98	70	34	71	87	65	32
1979	83	88	78	52	84	106	75	34	80	89	77	26
1980	91	96	86	52	89	96	87	29	84	84	84	26
1981	97	102	93	51	99	100	98	27	88	87	89	26
1982	99	100	97	49	96	80	102	22	100	106	97	33
1983	100	100	100	48	97	96	98	27	94	80	100	27
1984	101	99	103	47	107	124	100	31	107	114	103	34
1985	103	95	110	44	109	104	111	26	118	111	122	30
1986	103	93	113	43	106	76	118	19	120	104	128	27
1987	106	93	118	42	108	74	121	18	136	114	146	27

See footnotes at end of table.

--Continued

Table 8--Market basket of food products originating on U.S. farms by food group: Index of retail cost, farm value, and farm-to-retail price spread, and farm value share of retail cost 1/--Continued

Year	Fresh vegetables 4/				Processed fruits and vegetables 4/				Bakery and cereal products			
	Retail cost	Farm value	Farm-to-retail spread	Farm value share	Retail cost	Farm value	Farm-to-retail spread	Farm value share	Retail cost	Farm value	Farm-to-retail spread	Farm value share
	-----1982-84=100-----			Percent	----1982-84=100-----			Percent	-----1982-84=100-----			Percent
1965	34	41	31	35	33	35	33	21	32	51	30	17
1966	33	38	31	34	34	34	34	20	33	56	31	18
1967	33	38	31	32	34	31	35	18	34	54	32	17
1968	35	39	33	33	36	36	36	20	34	53	33	16
1969	36	41	34	33	36	38	36	21	35	53	34	16
1970	39	43	37	32	37	35	38	19	37	56	36	16
1971	40	45	38	33	39	36	40	18	39	57	37	16
1972	42	47	40	32	41	38	40	19	39	60	37	17
1973	52	63	48	35	44	41	42	19	44	90	38	22
1974	57	66	53	33	58	57	50	22	56	130	48	25
1975	54	65	50	34	61	63	57	21	63	107	57	19
1976	58	67	54	33	62	61	59	20	62	87	59	15
1977	65	74	62	33	64	59	66	19	62	72	61	12
1978	70	75	69	30	71	88	67	25	68	83	66	13
1979	73	71	73	28	77	91	74	23	75	95	72	14
1980	79	73	81	27	83	97	79	23	84	111	81	14
1981	94	104	90	32	92	106	89	23	92	109	90	13
1982	94	95	94	34	97	100	97	24	96	96	97	12
1983	98	97	98	34	98	93	100	23	100	101	99	12
1984	108	108	108	34	104	107	103	24	104	103	104	12
1985	104	93	109	31	107	118	104	26	108	94	110	11
1986	108	90	117	28	105	102	106	23	111	76	116	8
1987	122	112	126	31	109	111	108	24	115	71	121	8

1/ See table 5 for aggregate market basket and explanation of data. 2/ Includes butter. 3/ Excludes butter and includes peanut butter. 4/ Includes potatoes.

spread for pork rose almost 10 cents per retail pound last year reflecting a sharp rise in the retail price of pork and very little increase in farm value.

The farm-to-retail price spread for bakery and cereal products rose 4.5 percent as retail prices of bakery and cereal products rose 3.5 percent (table 6). The price spread for cereal may have increased because the cereal industry spent more on advertising, promotion, and selling to capitalize on growing demand for products that consumers perceive to be nutritionally beneficial.

The price spread for dairy products rose 3.7 percent in 1987 reflecting a modest rise in retail prices. For instance, the retail price of milk increased about 3 cents to $1.14 per half-gallon due for the most part to an increase in the farm-to-retail price spread from 56 to 58 cents. The price spread for poultry, which increases less than most foods over time, went up 18 percent in 1987, offsetting a nearly equally large drop in broiler and turkey prices at the farm level. Retail prices declined very little because rising meat prices and poultry consumption maintained strong consumer demand. The farm-to-retail price spread for eggs has also changed little over time, but it rose 11 percent in 1987, largely absorbing a 17-percent decrease in farm value.

The farm-to-retail price spread rose 14 percent for fresh fruits and 8 percent for vegetables. Most of the price spread for fresh fruits and vegetables consists of a retail margin which is larger, compared with other foods, because losses from spoilage are relatively high and because many fruits and vegetables are bulky and require a relatively large amount of store area for display. The increase in the marketing spread also reflects strong demand for fresh produce as evidenced by rising retail prices and consumption in recent years.

Trends in Price Spread and Farm Value Differ

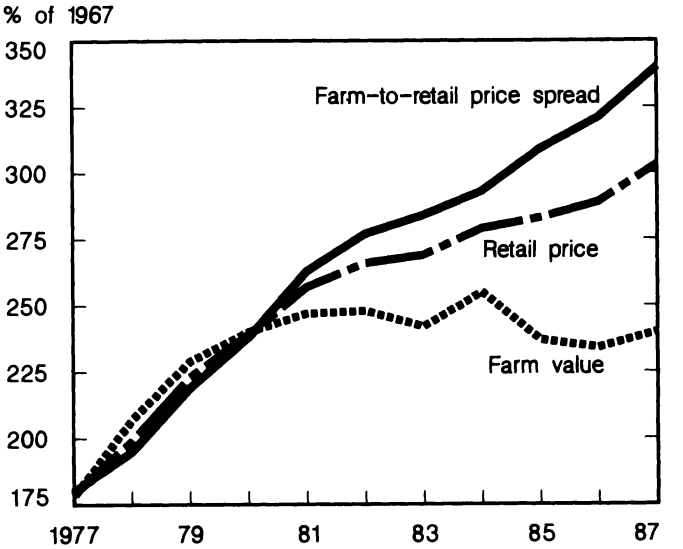
Retail prices of the market basket of farm foods bought in foodstores rose 27 percent during 1980-87. Food prices rose much less than the 39-percent increase in the CPI for all items less food. The farm value, which was about the same last year as in 1980, slowed the rise in retail food prices (fig. 3). In contrast, the farm-to-retail spread rose 43 percent, nearly equal to the rise in the CPI-U for all items less food.

The farm-to-retail price spread for the market basket of foods has increased each year since 1980. Increases in the farm-to-retail spread usually were close to the general inflation rate, reflecting the link (in terms of products and services used) between the food industry and the economy. Input costs of the food industry have gone up with the rise in the general price level, resulting in higher food processing and distributing charges.

Farm value of food has varied during the 1980's, rising some years and then declining. Very large crop production and expanded meat supplies limited the rise in farm value to under 3 percent in 1981. As a result, retail food prices went up much less than inflation. Crop harvests were again large in 1982. Although meat production declined slightly, the farm value barely increased because domestic and foreign demand for agricultural commodities was weaker during the long recession. The farm value declined in 1983 because of substantially increased livestock production, particularly hogs, and continued large supplies and weak demand for most food commodities. Farm value rose about 6 percent in 1984 because of smaller supplies of some commodities.

However, a decline in farm value in 1985 and 1986, reflecting larger livestock production, more than offset the rise in 1984. With the modest 2.3-percent rise in 1987, farm value was only equal to the 1980 level. During the 1970's, farm value and the farm-to-retail price spread moved at similar rates. Between 1970 and 1980, all three market basket series--farm value, farm-to-retail spread, and retail price--more than doubled. The rise in retail food prices nearly equaled the rise in the general price level.

Figure 3
Retail price, farm value, and price spread for food



Data for a market basket of foods sold in retail stores. Retail price is that paid by consumers. Farm value is prices received by farmers for commodities. Price spread represents all charges for processing and distribution.

The contrasting trend in the market basket series between the 1970's and the 1980's reflects the much different behavior of the farm value. Amid strong world demand for grains and oilseeds and reduced supplies of meats, farm value rose by 46 percent during 1972-74. Wheat and soybean prices rose sharply following huge sales to Russia. Livestock price increases reflected higher feed costs and Government actions to limit retail meat price increases that disrupted livestock marketings and production.

During 1978-80, a smaller but significant 17-percent increase occurred in farm value largely because of lower beef production and strong world grain markets. Since 1980, weak world demand for grains and rising domestic grain and livestock output depressed farm value.

Market Basket Revision

Beginning with data for January 1987, BLS has revised the CPI-U. One of the most important elements of the revision was the updating of the consumer expenditure weights which are used to average the price changes of various food items according to their importance in household spending patterns. The 1987 CPI-U revision is based on expenditures from 1982-84. The previous revision, in 1978, used expenditure data from 1972-73.

The market basket retail index is a subcomponent of the CPI-U for food consumed at home and was also revised for the 1987 data. Retail price indexes prior to the 1987 revision were not affected by the updating of expenditure weights. The market basket excludes fish and seafood, nonalcoholic beverages, and bananas, because the prices of these products are not significantly affected by prices of U.S. farm commodities. The market basket also excluded imported products in the sugar and sweets and seasonings categories before 1987. The current index is not adjusted to exclude imported products when domestic commodities are the major source of supply of the food group.

To maintain equivalent quantities at the farm and retail levels, USDA's Economic Research Service (ERS) has revised the farm value of the market

basket to match the revised retail expenditure weights. ERS also revised the farm value index and farm share of most food groups for 1982-86. The miscellaneous food group was divided into sugar and sweets and other foods. The revision raised the farm share of fruits and vegetables several percentage points reflecting a change in the mix of items in these groups. The farm shares for meat and cereal and bakery also increased slightly. The farm share of the overall market basket was raised about 1 percentage point because of reweighting and other revisions in the series.

FOOD INDUSTRY COSTS, PROFITS, AND PRODUCTIVITY

Many factors influence how much the food industry charges for its services. Food industry input costs, profits, and productivity largely determine how much the price of food increases after it leaves the farm.

Prices of Marketing Inputs

Increases in farm-to-retail price spreads mainly reflect rising costs faced by food industry firms. These costs include wages and salaries of workers and prices of many supplies and services bought by marketing firms from other parts of the economy. ERS maintains a food marketing cost index (FMCI) for monitoring and analyzing changes in operating costs incurred in processing, wholesaling, and retailing of domestically produced foods. The FMCI consists of hourly earnings of workers and price indexes of various marketing inputs weighted by the share of each input in total operating costs. The FMCI is not a substitute for more conventional measures of marketing costs. However, the behavior of the index at least partially indicates changes in operating costs of the food marketing sector. The index does not account for changes in productivity and profits.

The largest component of the index (45 percent) is labor costs, which is composed of hourly earnings of workers and employee benefits. Labor is followed by food containers and packaging materials (15 percent), transportation rates (11 percent), and energy costs (8 percent). Other cost components include advertising, maintenance and repair services, insurance, short-term interest, rent, and miscellaneous supplies and services.

In 1987, the FMCI rose 2.1 percent. Prices rose for most inputs required in food processing and distibution. Increases were largest for food packaging, advertising rates, taxes and insurance, and various business services (table 9). Because we assume that businesses must recover increases in variable costs, the rise in the FMCI partially explains the observed increase in the farm-to-retail price spread and food prices at retail. The absence of a strong link between the FMCI and food prices last year indicates that other factors are involved in price formation. These factors could include changes in the mix of variable inputs, rising fixed costs, and profits which are excluded from the FMCI, and productivity trends and consumer demand. These factors are more difficult to account for on a timely basis than variable inputs, such as labor.

Labor Costs

The labor cost, the largest component of the FMCI, rose 1.7 percent in 1987. The labor cost index is computed from changes in hourly earnings of workers and wage supplements, principally employer Social Security and unemployment taxes, pensions, and health insurance costs.

Table 9--Price indexes of food marketing costs 1/

Year	Labor, hourly earnings and benefits				Packaging and containers							Transportation services
	Total	Processing	Wholesaling	Retailing	Total	Paper boxes and containers	Metal cans	Paper bags and sacks	Plastic packaging	Glass containers	Metal foil	
					1967=100							
1967	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1968	106.5	105.9	106.7	107.0	96.3	95.9	104.4	101.0	78.4	107.5	100.2	102.0
1969	113.7	112.7	113.5	114.8	99.5	99.4	107.1	103.6	79.9	114.7	105.5	105.0
1970	122.5	121.2	125.1	122.6	103.6	101.1	113.1	108.0	86.0	120.3	106.3	114.3
1971	131.9	130.9	131.9	133.0	106.6	102.4	123.8	109.7	81.8	131.6	106.4	128.5
1972	143.3	134.0	143.7	146.4	110.4	105.5	131.8	113.6	82.9	135.1	106.1	132.5
1973	154.2	151.3	153.7	157.3	117.3	115.1	138.5	121.6	86.4	138.9	106.0	135.2
1974	168.7	164.3	167.4	173.7	149.7	152.2	170.3	144.9	129.6	155.5	113.0	156.3
1975	187.4	184.1	182.3	192.9	174.4	170.3	200.2	161.6	170.8	181.8	116.6	176.9
1976	203.8	200.1	197.6	210.3	184.8	176.2	212.1	170.0	188.1	195.4	127.1	194.4
1977	222.4	217.6	217.8	229.4	192.8	176.5	231.4	176.7	193.6	214.4	140.0	205.1
1978	244.4	237.7	239.3	254.0	204.7	179.6	263.8	186.5	192.1	244.4	159.3	220.5
1979	265.8	257.9	260.4	276.1	228.4	202.1	293.0	209.7	216.9	261.1	175.6	251.3
1980	292.6	283.3	283.5	306.4	261.5	234.6	325.7	236.5	238.5	292.7	184.1	296.8
1981	321.3	309.2	309.5	338.6	280.9	258.2	345.8	258.9	262.5	328.6	203.3	345.9
1982	342.7	330.0	335.1	359.3	275.1	254.9	363.6	264.4	200.0	355.7	213.2	371.1
1983	356.8	341.9	358.1	371.1	280.7	251.0	374.3	265.4	226.2	352.4	214.0	374.5
1984	365.5	350.2	371.1	378.3	303.5	264.0	397.3	290.9	273.1	360.8	226.9	391.7
1985	363.0	357.9	382.7	364.1	312.1	271.6	416.9	294.7	274.4	380.0	213.8	393.9
1986	360.9	365.0	377.4	349.5	317.4	269.1	430.1	307.9	274.8	398.0	209.3	391.7
1987	366.9	375.5	393.4	346.6	329.8	288.0	433.0	331.3	280.2	402.0	222.1	385.0

See footnote at end of table.

--Continued

Table 9--Price indexes of food marketing costs 1/--Continued

Year	Advertising	Fuel and power			Communications, water, and sewage	Rent	Maintenance and repair	Business services	Supplies	Property taxes and insurance	Interest, short-term	Total marketing cost index
		Total	Electric	Petroleum	Natural gas							
						1967=100						
1967	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1968	102.5	99.7	100.9	101.9	92.7	100.8	104.4	105.8	105.0	102.1	109.2	115.5	103.5
1969	107.5	100.5	101.8	102.4	93.2	102.8	109.4	113.7	109.9	102.8	118.3	153.2	109.2
1970	109.6	106.1	105.8	106.5	103.6	105.1	115.4	122.3	115.6	106.5	130.4	150.9	116.1
1971	108.7	112.3	113.6	110.3	108.0	111.3	121.7	131.5	123.5	108.7	141.9	100.0	123.0
1972	113.2	118.4	121.5	113.3	114.1	117.8	126.3	137.9	128.2	119.9	153.3	92.6	130.5
1973	118.2	133.1	129.3	139.7	126.7	120.8	131.1	146.7	133.3	113.4	158.4	159.5	139.4
1974	124.2	198.9	163.1	272.2	162.2	126.3	145.9	164.3	146.8	145.1	162.9	192.6	159.8
1975	136.9	236.1	193.4	309.4	216.7	131.8	167.0	182.2	159.6	169.9	180.1	123.7	178.8
1976	152.8	264.5	207.7	336.9	286.8	138.4	174.9	196.1	171.3	181.3	194.5	104.7	193.6
1977	166.3	310.6	232.9	384.1	388.0	142.6	185.0	209.2	182.5	188.9	219.0	109.8	209.2
1978	181.3	331.7	250.6	398.1	428.7	147.5	199.2	226.9	195.2	197.8	237.3	156.4	227.0
1979	197.4	418.2	270.3	574.6	544.8	148.7	216.4	249.7	211.0	224.3	246.9	213.5	252.2
1980	214.5	563.2	321.6	850.6	724.8	153.9	235.0	277.1	230.6	259.3	270.2	240.3	286.0
1981	234.9	669.2	367.9	1,056.2	826.3	168.7	255.0	304.0	254.2	283.8	294.0	288.8	317.5
1982	260.1	705.1	406.1	1,012.1	990.3	186.7	264.3	325.1	277.1	289.1	309.9	232.6	334.0
1983	280.2	705.1	417.9	895.9	1,155.6	199.6	260.6	338.2	291.9	286.5	327.5	174.0	342.4
1984	300.5	712.5	440.0	880.4	1,162.6	215.5	261.3	350.3	306.1	288.3	343.7	198.4	356.2
1985	320.2	700.0	453.5	821.5	1,158.2	224.9	268.3	360.3	321.9	287.9	362.0	157.2	358.6
1986	339.7	590.2	457.9	499.8	1,096.9	236.1	273.8	368.5	334.1	282.7	382.3	125.1	355.5
1987	361.1	596.7	450.5	561.4	1,049.0	238.4	279.4	382.6	346.1	286.8	399.6	132.9	362.9

1/ Indexes measure changes in employee wages and benefits and in prices of supplies and services used in processing, wholesaling, and retailing U.S. farm foods purchased for consumption at home.

The rise in the labor cost index was relatively small because of a slight decrease in average hourly earnings of workers in food retailing. Hourly earnings were lower in food retailing partly because almost half of the 1987 contract settlements contained some provisions for lump-sum cash payments instead of a wage increase. Lump-sum payments are attractive to both labor and management because workers get a pay raise, but the basic wage rates remain the same. The latter is important to retailers because some compensation, such as overtime and vacation pay, is based on the basic wage rates. Greater use of part-time workers, who usually earn less than full-time workers, may also have contributed to the decline in hourly earnings in food retailing.

Hourly earnings increased about 2 percent in food manufacturing in 1987, about the same as in each of the previous 2 years. Hourly earnings in food manufacturing have historically been higher than those in retailing. Earnings in manufacturing averaged $8.94 per hour in 1987, compared with $6.95 in food retailing (table 10).

Wage supplements, the other component of labor cost, have increased steadily over the years, reflecting rising Social Security payments and health and welfare benefits for workers. The 1987 increase in costs included a small rise in Social Security payroll taxes for employers because the maximum amount of taxable wages increased from $42,000 to $43,800. The tax rate on wages remained 7.15 percent. Other employer-paid health and welfare costs continued to rise, but employers have slowed the rise by reducing benefits or requiring employees to pay a share out of their wages. Employee compensation data from the U.S. Department of Commerce show supplemental benefits were the same proportion of total compensation in 1986 (the latest available data) as in 1985, which means the increase in these costs was about the same as the increase in salary and wage payments. Before 1985, supplemental benefits had risen faster than wages and salaries and, therefore, had become a major target of employers trying to slow the rise in labor costs. Wage supplements in the food manufacturing industry averaged 19 percent of total compensation in 1986. Data are not published specifically for food retailing, but supplements for all retail trade were 13.2 percent of compensation, nearly unchanged from 1985.

Wage increases were relatively small throughout the economy in 1987. Labor contract settlements in private industry during 1987 provided wage increases averaging 2.1 percent in the first year of the contract and 2.3 percent annually over the life of the contract, according to data compiled by the U.S. Department of Labor. These averages were larger than a year earlier, but the increases in 1986 were the lowest for any year since the series began in 1968. The size of average wage adjustments last year was dampened because 40 percent of workers received lump-sum payments, which are not included in the averages. Comparable averages are not available for the food industry, but a sampling of negotiated labor contracts indicates that most workers received small wage increases or some other increased compensation.

Labor contracts negotiated in 1987 affected about 250,000 foodstore clerks and meatcutters. This number represented about 33 percent of union workers in food retailing. Labor settlements varied among geographic areas of the country, reflecting economic considerations such as the profitability of the food chains that employ the workers and the competitive environment in the marketing area. Union workers in some markets agreed to cuts in compensation, changes in work rules, and increases in the number of lower paid part-time

workers. For instance, several thousand clerks and meatcutters employed by a major food chain in Denver agreed to a 14-percent pay cut so that the company could match its labor costs with those of lower cost stores. In exchange, workers will participate in a company profit-sharing plan. Under the plan, if a store makes more than 1-percent net operating profit, the company will distribute 15 percent of the remaining profit to workers.

The contract, however, does not have any job security measures. If the chain were sold, the new owner would not be required to hire current employees. Other features of the contract that reduce costs were the loss of two paid holidays, reduced contributions to the pension fund, and reduced premium pay for Sundays and holidays.

Labor contracts of retail clerks and meatcutters negotiated last year frequently provided for a combination of lump-sum bonuses to workers and increases in hourly wage rates. Bonuses increase labor costs, but they are less costly than increased wages because they have no effect on benefit levels and they eliminate the compounding effects that occur when wage bases are raised and become the foundation for future wage negotiations. The lump-sum payments were usually 2-3 percent of workers' annual wages. For instance, 45,000 retail food clerks in southern California agreed to contracts that will give them bonuses the first 2 years of the contract, with a 50-cent hourly wage increase the third year. The wage increase will raise an experienced food clerk's pay to $13.05 per hour.

Some contract settlements provided for small wage increases only. A 42-month contract affecting 7,000 meatcutters employed by food retailers in New Jersey provides for an 8-percent wage increase with most of it taking effect the first year. The workers also negotiated a phase-out of the two-tier wage structure that established lower pay rates for new employees. Unlike many

Table 10--Average hourly earnings of production and nonsupervisory employees of food industries

Year	Manufacturing, food and kindred products	Wholesale trade, groceries, and related products	Foodstores	Eating and drinking places
		Dollars per hour		
1977	5.37	5.43	4.77	2.93
1978	5.80	5.92	5.23	3.22
1979	6.27	6.39	5.67	3.45
1980	6.85	6.96	6.24	3.69
1981	7.44	7.57	6.85	3.95
1982	7.92	8.25	7.22	4.09
1983	8.19	8.70	7.51	4.27
1984	8.39	9.03	7.64	4.26
1985	8.57	9.22	7.35	4.33
1986	8.75	9.30	7.06	4.35
1987	8.94	9.52	6.95	4.41

Source: Employment & Earnings, U.S. Department of Labor.

settlements in the industry, the New Jersey contract did not include any of the concessions that employers wanted such as reduced Sunday premium pay and the repeal of a clause requiring that a full-time worker be replaced by another full-time worker.

Overall, labor settlements in food retailing last year provided some form of pay raise for most workers. However, through an assortment of changes in labor use and compensation, the retail food industry has lowered average hourly earnings, as measured by the Department of Labor series, by about 9 percent since 1984. This decrease has been accomplished by lowering wages for new workers, reducing overtime pay, changing work rules to allow lower paid workers to do additional jobs in stores, and employing more part-time workers.

Packaging, Supplies, and Services

Prices increased in 1987 from 2-4 percent for most principal categories of inputs bought by the food industry. The index of prices paid for food containers and packaging materials rose about 4 percent in 1987, nearly double the rise the previous year. Prices for paperboard products, such as shipping boxes, rose 7 percent and contributed most to the rise in the packaging index. Plastic packaging went up 2 percent. Prices of glass containers and metal cans rose only 1 percent.

A price index of supplies used by food processors and retailers averaged about 1.5 percent higher in 1987. This index is based on producer prices of motor vehicle supplies, chemicals, cleaning materials, and numerous other items. Prices for most services also continued to increase last year. Advertising rates advanced over 6 percent, and business services such as accounting and printing went up 4 percent. Property taxes and insurance, a rapidly rising cost in recent years, advanced 4.5 percent in 1987.

Higher interest rates also pushed marketing costs up. Short-term rates, as measured by 4- to 6-month commercial interest rates, averaged 6 percent higher in 1987 than a year earlier.

Transportation Rates

The transportation cost index representing railroad freight rates declined about 1.5 percent in 1987. Most foods shipped by railroad are canned and bottled products. Some meats and fresh fruits and vegetables are shipped in truck trailers on flat cars (TOFC), but information on these charges is not available. TOFC shipments of fresh fruits and vegetables declined about 7 percent during 1987, and TOFC shipments declined to about 6 percent of total produce shipments. Nearly an equal quantity of produce is shipped in rail cars.

About 89 percent of fresh produce is transported by truck. Individuals who own and operate trucks appear to carry slightly less than 50 percent of the west-to-east shipments of produce and shipments from Florida. Most produce is hauled by trucking firms operating fleets and by companies whose principal business is not transportation. Some owner-operators now lease their equipment and their services as drivers to these companies. All groups of truckers have become important fresh and processed food distributors, and competition among them for hauling produce has held down truck rates.

Operating costs of trucks hauling produce, as reported by USDA's Office of Transportation, rose about 3 percent in 1987. Diesel fuel prices contributed most to the higher costs. Truckers also experienced a major increase in insurance costs. In 1987, insurance costs averaged 7.7 cents per mile, about 8.5 percent more than in 1986.

Perhaps reflecting rising costs, truck rates for shipping fresh produce rose modestly in 1987. For example, the rate for shipping lettuce from California to New York City averaged $3.81 per box, 1.6 percent higher than in 1986. Rates averaged $3.23 per box for citrus fruits and vegetables, about 2.2 percent higher (table 11). The increase in rates has been smaller than the rise in estimated costs due to strong competition among haulers.

Financial Ratios

Two financial ratios are useful in evaluating the profitability of the food industry: profit margin and return on stockholder equity. The profit margin

Table 11--Trucking costs and rates for fresh fruits and vegetables, selected items and routes, annual average

Year	Truck cost for fleet operators 1/	Truck rates by commodity and origin/destination 2/		
		Lettuce 3/, California to New York City	Citrus and vegetables, southern California to New York City	Apples, Washington State to New York City
	Dollars per mile	Dollars per box		
1980	0.96	3.36	2.77	3.09
1981	1.08	3.45	2.77	3.25
1982	1.11	3.62	2.91	3.20
1983	1.13	3.62	2.98	3.41
1984	1.15	3.65	3.18	3.19
1985	1.17	3.62	3.06	3.20
1986	1.14	3.75	3.16	3.21
1987	1.16	3.81	3.23	3.28
		Percent		
Change, 1980-87	20.7	13.4	16.6	6.1

1/ Truck costs developed by Office of Transportation, USDA. 2/ Truck rates are the average rates reported by Agricultural Marketing Service, Market News Service, USDA, for the first week of the month. Rates per truck were converted for 1980 to 1983 at: Lettuce, 800 boxes/load; citrus fruits and vegetables, 1,000 boxes/load; apples 900 boxes/load. Beginning in 1984, rates were converted at 850 boxes/load of lettuce from Salinas, California, and 860 boxes/load for lettuce from Imperial Valley, California, and 1,000 boxes/load for apples. 3/ January to April: Imperial Valley, California, to New York City; May to December: Salinas, California, to New York City.

is net income as a percentage of sales; it measures the portion of the sales dollar left after paying all expenses, including the cost of food products. The profit margin helps explain the importance of profits in relation to costs that together make up the consumer food dollar. Return on stockholder equity, which reflects the earning power of the owner's investment, shows food industry profitability compared with that of other industries.

Pretax margins of food chains typically average about 1.8 cents per dollar of sales and slightly over 1 cent after taxes. This relatively low margin is possible because of high sales volume and rapid inventory turnover. Profits per dollar of sales of food manufacturers are higher, averaging 5-6 cents before taxes and 3-4 cents after taxes, mainly because of their larger capital investment per dollar of sales and slower inventory turnover.

After-tax profit margin of food and tobacco manufacturers averaged 4.5 percent of sales in 1987, up from 4.2 percent in 1986, based on data compiled by the Bureau of the Census. Returns on stockholders' equity rose to 17.3 percent last year (table 12). Return on equity for the food and tobacco industry was much higher than the 12.7-percent average for all manufacturers.

Profit margins of many food processors improved last year due to rising consumer demand for value-added foods that are easier to prepare, such as microwave products.

Among 27 companies selling branded food products listed in Forbes magazine's annual industry survey, 17 companies improved their net profit margin in 1987. The after-tax profitability of the industry benefited from continued low commodity prices and tax reforms enacted in 1986. Some companies also have become more efficient by acquiring smaller firms to attain greater economies of size.

Profit margins of retail food chains averaged 0.9 percent of sales in 1987, down from 1.1 percent a year earlier and the lowest since 1982. The decline in the industry profit margin was due to a huge loss incurred by one company from selling and closing stores to finance a leveraged buyout. If this firm were eliminated from the data, the profit margin for the industry last year would be higher than in 1986. Food chains' profit margins exceeded the traditional industry standard in recent years because of reduced cost pressures, particularly for labor and energy. Retailers have also been opening larger supermarkets that carry more nonfood items (which have higher markups than groceries).

Profit margins for most individual leading food chains improved in 1987 (table 13). One company, Giant Food, sharply increased its profit margin to 2.8 percent of sales, greatly above the industry average. Kroger, the largest food chain, reported a profit margin of 1 percent of sales in 1987, up from 0.8 percent in 1986.

Labor Productivity

Food industry productivity estimates for 1987 were not available at press time. But, productivity improved by less than 1 percent during 1987 in the Nation's business sector, excluding farming (table 14). Employment in the food industry rose, which could have offset increases in output. Output of grocery stores rose only about 1 percent based on food sales adjusted for inflation. However, real sales of eating and drinking places increased 4-5

Table 12--Profit margins of food manufacturers and retail food chains, industry averages

Year and quarter	Food manufacturers 1/			Retail food chains 2/		
	After-tax profits as a percentage of--					
	Sales	Stockholder equity	Assets	Sales	Stockholder equity	Assets
	Percent					
1976	3.5	14.9	7.5	0.8	10.0	4.3
1977	3.1	13.2	6.7	.8	10.7	4.5
1978	3.3	13.8	6.8	.9	12.7	4.7
1979	3.3	14.7	7.2	.9	12.7	4.2
1980	3.4	14.7	7.1	.9	13.7	4.5
1981	3.1	13.6	6.5	1.0	13.9	4.7
1982	3.1	13.0	6.3	.9	12.7	4.4
1983	3.3	13.3	6.0	1.1	13.6	4.9
1984	3.3	13.3	6.0	1.4	17.3	6.0
1985	4.1	15.3	6.6	1.3	14.5	5.3
1986	4.2	16.2	6.3	1.1	11.9	4.4
1987	4.5	17.3	6.7	.9	12.8	3.6
1983:						
I	2.2	8.0	3.9	1.0	11.8	4.3
II	3.4	12.5	6.2	1.2	14.2	5.2
III	3.5	13.2	6.5	.9	11.2	4.0
IV	4.0	15.2	7.4	1.3	17.0	6.0
1984:						
I	3.3	13.0	6.1	1.5	18.0	6.5
II	3.3	13.8	6.4	1.4	17.6	5.9
III	3.1	12.8	5.7	1.2	14.3	4.8
IV	3.3	13.6	5.9	1.6	19.2	6.9
1985:						
I	3.4	12.8	5.6	1.1	13.0	4.7
II	3.9	15.0	6.6	1.3	14.9	5.5
III	4.6	16.5	7.3	1.2	13.2	4.8
IV	4.6	16.9	7.1	1.5	16.8	6.3
1986:						
I	3.6	13.3	5.4	1.2	13.0	4.8
II	4.0	15.9	6.4	1.3	13.8	5.3
III	3.9	15.5	5.9	.7	7.1	2.6
IV	5.2	20.0	7.6	1.2	13.6	5.0
1987:						
I	3.7	13.6	5.2	.7	9.0	2.6
II	4.4	17.2	6.6	1.0	13.2	3.9
III	4.4	16.9	6.6	.7	9.7	2.6
IV	5.6	21.1	8.3	1.4	19.0	5.1

1/ Data represent aggregate estimates for corporations, based on a sample of company reports. Beginning in 1985, data are not comparable with earlier years because the tobacco industry was combined with food manufacturers. 2/ Data are based on reports from all food retailing corporations having more than $100 million in annual sales, at least 70 percent of which are derived from supermarket operations.

Source: U.S. Department of Commerce.

Table 13--After-tax profits of selected supermarket food chains per dollar of sales, fiscal year or four calendar quarters

Firm	1984	1985	1986	1987
		Percentage of sales		
Albertson's	1.68	1.68	1.86	2.14
American Stores	1.53	1.11	1.03	1.08
Atlantic & Pacific Tea	.86	.85	.88	1.07
Food Lion	2.54	2.55	2.57	2.91
Giant Food	2.11	2.54	1.84	2.78
Grand Union	-.20	.59	1.21	1.58
Kroger	1.01	1.00	.81	1.04
Lucky	1.08	.78	1.28	1.72
Marsh Supermarkets Inc.	.70	.90	.87	.92
Publix Supermarkets	2.35	2.07	2.22	2.08
Safeway	.94	1.00	-.07	-2.66
Stop & Shop	1.62	1.03	1.15	1.28
Winn-Dixie	1.47	1.34	1.26	1.30

Source: Food Institute Reports, The American Institute of Food Distribution Inc., Fair Lawn, New Jersey.

percent, probably improving productivity. Productivity in food retailing and eating places has not improved during the past decade.

The steady improvement in labor productivity in industries that manufacture food probably continued in 1987. Output per unit of labor in seven food manufacturing industries for which data are available increased 1.5-5 percent per year over the past 18 years. These increases in most instances resulted from increased output and a small decline in hours worked. Labor productivity among food manufacturers has increased most in fluid milk processing and grain milling (table 15). Productivity has grown erratically for most industries, partly because of fluctuating output and business conditions.

Output per unit of labor among supermarkets has steadily declined since the late 1970's. It fell 1 percent in 1986 from 1985 and was about 9 percent lower than 10 years ago. However, some store operations are more efficient because of computer-assisted checkout systems and data processing systems and new store formats such as warehouse stores with a limited assortment of products. Warehouse stores provide reduced services and thus cut labor requirements, or they foster higher sales per unit of labor.

Most food chains have closed smaller, inefficient stores. On the other hand, supermarkets have been responding to consumer demand for saving time in food buying and preparation by expanding service-oriented operations such as delicatessens, salad bars, and instore bakeries. Providing the products and shopping convenience that consumers want has added to industry employment and made productivity gains more difficult. In addition to tailoring products to

Table 14--Productivity measured by output per unit of labor

Year	Food-stores	Eating and drinking places	Nonfarm business sector of the economy
		1977=100	
1967	98.0	97.5	87.0
1968	103.0	99.7	89.3
1969	103.9	97.8	88.9
1970	109.8	101.0	89.1
1971	110.4	98.3	91.8
1972	110.3	102.3	94.7
1973	105.5	103.6	96.4
1974	101.1	99.1	94.3
1975	100.7	101.0	96.0
1976	102.0	101.4	100.0
1977	100.0	100.0	100.0
1978	94.9	99.3	100.8
1979	96.3	99.4	99.2
1980	98.9	99.5	98.8
1981	95.2	97.0	99.8
1982	93.5	96.6	99.2
1983	93.9	97.1	102.5
1984	93.6	94.9	104.3
1985	94.2	93.5	104.8
1986 1/	93.0	96.3	107.5
1987 1/	--	--	108.5

-- = Not available.
1/ Preliminary. Some historical data were revised.
Source: U.S. Department of Labor, Bureau of Labor Statistics.

consumer demand, many supermarkets are trying to make shopping easier and faster by opening more registers at busy times and extending store hours.

Labor use in food retailing increased 14 percent between 1980 and 1986, based on the latest available U.S. Department of Labor data, and output rose 7 percent, resulting in lowered productivity. The effect of more use of labor on unit costs has been partly offset, however, by a decline in average hourly earnings since 1984.

The trend in productivity is similar for eating places. Although labor productivity in eating and drinking places rose 3 percent in 1986, it was 5 percent lower than 1976. Productivity declined the past decade because hours worked rose 39 percent, but output rose by only 32 percent.

Table 15--Indexes of output per employee hour in selected food manufacturing industries

Year	Red meat products	Poultry dressing and processing	Fluid milk	Preserved fruits and vegetables	Grain mill products	Bakery products	Sugar
				1977 = 100			
1967	74.8	80.6	62.9	73.8	73.0	82.8	77.1
1968	76.6	77.9	66.5	75.6	77.0	84.5	80.5
1969	75.7	76.8	69.6	76.9	78.3	84.7	78.6
1970	77.3	78.3	73.7	79.7	79.7	87.5	85.9
1971	79.3	85.5	79.4	83.1	83.3	89.5	84.9
1972	85.0	88.1	85.1	84.6	85.5	94.1	90.4
1973	82.8	77.5	88.4	93.1	81.7	93.6	96.3
1974	84.5	87.3	90.9	91.7	86.4	93.6	93.2
1975	84.4	87.9	95.5	93.7	87.1	93.4	94.0
1976	93.4	98.6	99.5	100.1	91.1	93.9	95.8
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	98.8	101.3	108.6	104.1	100.2	97.6	98.3
1979	101.7	106.1	117.3	98.9	101.0	95.0	103.1
1980	107.0	105.7	123.9	100.8	105.1	93.7	100.1
1981	107.9	116.4	128.0	99.2	110.9	96.2	98.8
1982	112.3	125.6	135.3	107.9	121.0	103.3	90.4
1983	115.9	131.7	142.4	110.4	125.5	106.9	98.6
1984	117.0	130.3	147.7	113.1	132.8	106.8	99.7
1985	119.5	133.2	152.3	112.6	144.9	108.5	105.5
Average annual change:				Percent			
1967-85	2.6	2.8	5.0	2.4	3.9	1.5	1.8
1979-85	2.7	3.8	4.5	2.2	6.2	2.3	.4

Source: U.S. Department of Labor, Bureau of Labor Statistics.

FOOD SPENDING: HOW IT WAS DISTRIBUTED

Food spending (what consumers spent for domestically produced foods in 1987) depends on both quantities bought and prices paid. The expenditures reported in this section include spending at eating places and foodstores. Food expenditures are broken into two components:

- The farm value is an estimate of the dollar value at the point of sale by farmers of the farm commodities equivalent to foods purchased by consumers at food stores and eating places.

- The marketing bill is the difference in dollars between the farm value and consumer expenditures for foods produced on U.S. farms.

Last year's changes in the marketing bill can be evaluated by dividing the total bill into costs for several principal marketing functions, such as processing and retailing, and by breaking it down into costs for principal inputs, such as labor and packaging.

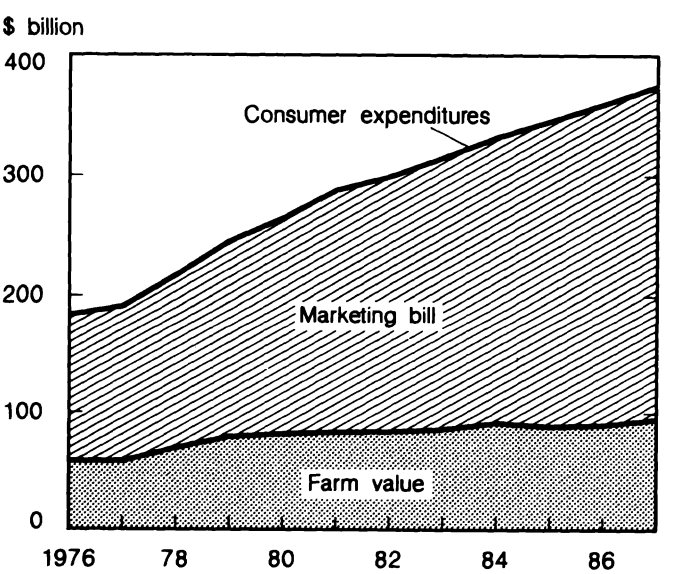
Most of these estimates are based on secondary data, not on direct measures of consumer food expenditures or actual marketing costs, limiting their accuracy. Thus, they are general indicators, not precise measures, of levels and yearly changes.

Food Expenditures Up

Consumers spent $377 billion for foods originating on U.S. farms in 1987 (fig. 4 and table 16). This amount was less than what all consumers spent for all food because it excluded expenditures for imported foods and fishery products. About 62 percent of those expenditures was spent at retail foodstores on food for use at home. The remaining 38 percent represented the retail value of foods served by public eating places, hospitals, schools, and other institutions. The market share for food eaten away from home was slightly higher than in 1986, and the foodstore share declined 1 percentage point.

Consumer expenditures for domestic farm foods in 1987 rose by 4.9 percent. The increase in spending came largely from higher food prices and greater spending for food away from home. Based on sales data reported by the Bureau of the Census, food spending at eating places rose over 9 percent in 1987. In constant dollar terms, the increase was over 5 percent and much larger than in other years. In contrast, foodstore sales rose 4.2 percent in 1987, mainly because of higher prices. Foodstore sales consist of both

Figure 4
Marketing bill, farm value, and consumer expenditures for farm foods



1987 preliminary. Data for domestically produced farm foods purchased by civilian consumers for consumption both at home and away from home.

Table 16--Marketing bill and farm value components of consumer expenditures for domestically produced foods

Year	Consumer expenditures			Marketing bill	Farm value	Farm value share of expenditures
	Total	At home 1/	Away from home 2/			
	Billion dollars					Percent
1950	44.0	--	--	26.0	18.0	41
1951	49.2	--	--	28.7	20.5	42
1952	50.9	--	--	30.5	20.4	40
1953	51.0	--	--	31.5	19.5	38
1954	51.1	--	--	32.3	18.8	37
1955	53.1	--	--	34.4	18.7	35
1956	55.5	--	--	36.3	19.2	35
1957	58.3	--	--	37.9	20.4	35
1958	61.0	--	--	39.6	21.4	35
1959	63.6	--	--	42.4	21.2	33
1960	66.9	--	--	44.6	22.3	33
1961	68.7	--	--	45.7	23.0	33
1962	71.3	--	--	47.6	23.7	33
1963	74.0	56.0	18.0	49.9	24.1	33
1964	77.5	58.5	19.0	52.6	24.9	32
1965	81.1	60.2	20.9	54.0	27.1	33
1966	86.9	64.0	22.9	57.1	29.8	34
1967	91.6	66.8	24.8	62.4	29.2	32
1968	96.8	69.5	27.3	65.9	30.9	32
1969	102.6	73.1	29.5	68.3	34.3	33
1970	110.6	78.2	32.4	75.1	35.5	32
1971	114.6	80.6	34.0	78.5	36.1	32
1972	122.2	85.4	36.8	82.4	39.8	33
1973	138.8	98.5	40.3	87.1	51.7	37
1974	154.6	109.5	45.1	98.2	56.4	36
1975	167.0	116.2	50.8	111.4	55.6	33
1976	183.3	127.2	56.1	125.0	58.3	32
1977	190.9	130.8	60.1	132.7	58.2	30
1978	216.9	149.2	67.7	147.4	69.5	32
1979	245.2	169.4	75.8	166.0	79.2	32
1980	264.4	180.1	84.3	182.7	81.7	31
1981	287.7	194.0	93.7	204.5	83.2	29
1982	298.9	196.7	102.2	215.2	83.7	28
1983	315.0	204.6	110.4	229.3	85.7	27
1984	332.0	213.1	118.9	240.6	91.4	28
1985	345.4	220.8	124.6	257.1	88.3	26
1986	359.6	226.0	133.6	270.5	89.7	25
1987 3/	377.1	232.3	144.8	283.2	93.9	25

-- = Not available.

1/ Includes food primarily purchased at retail foodstores. 2/ Includes food purchased at restaurants, fast food outlets, and other public eating places, and food served in institutions such as hospitals, schools, and rest homes.

3/ Preliminary. Some historical data have been revised.

food and nonfoods. Sales of nonfoods have been growing faster than food sales. After adjusting for nonfood sales, spending on domestic farm foods at foodstores increased only about 2.8 percent in 1987.

Meat products represent the largest share of total retail food expenditures. Retail value of meat in 1987 was 29 percent of total expenditures, compared with 23 percent for fruits and vegetables, the next largest expenditure group (table 17). Because food consumption changes slowly, the proportion of expenditures accounted for by meat products and other food groups has changed little from year to year.

Farm Value Rose

The farm value increased about $4 billion in 1987 to $94 billion, the largest increase since 1984. Higher prices for cattle, fruits and tree nuts, and vegetables accounted for much of the rise in farm value. Lower farm prices for poultry and eggs resulted in lower farm values for these foods. Farm value in 1987 was 15 percent higher than in 1980, but consumer spending was 43 percent higher.

The largest share of the money received by farmers for domestic food sales was for meat products. In 1987, the farm value of meat was about 35 percent of the total. The next largest share, 20 percent, was for dairy products. Livestock and dairy producers garnered over half the farm value, but they bought substantial amounts of grain from crop farmers.

The farm value of food products represents 25 percent of consumer expenditures for farm foods in 1987, unchanged from 1986 but 1 percentage point less than in 1985. The farm value is a much smaller part of expenditures for foods eaten away from home than for foods bought at stores because the cost of preparing and serving foods is a huge part of the cost of food eaten out. The 1987 farm value accounted for about 17 percent of expenditures for food consumed away-from-home, compared with about 30 percent of expenditures for farm foods in foodstores.

Marketing Bill Boosted Food Spending

The marketing bill, the difference between what consumers spent for food and the farm value, amounted to $283 billion in 1987, about $13 billion more than in 1986. This increase in the marketing bill accounted for nearly 75 percent of the rise in consumer expenditures.

Higher labor costs accounted for about one-half of last year's increase in the marketing bill, a smaller proportion than in 1986. Much of the remaining increase in the bill occurred in food packaging materials and the category of other costs including such items as advertising and promotion, taxes and insurance, and professional services.

The increase of 4.7 percent in the marketing bill in 1987 was due to higher prices of most inputs and greater use of some inputs, particularly labor. Relatively stable transportation and energy costs and greater industry efforts to control labor and other costs have slowed the rise in the marketing bill in recent years.

Although the rise has slowed during the past several years, marketing costs continue to be the most persistent source of rising food expenditures.

Table 17--Consumer expenditures and farm value for major food groups

Year	Meat	Fruits and vegetables 1/	Dairy products	Bakery products	Poultry	Grain mill products 2/	Eggs	Other foods 3/	Total
				Billion dollars					
Consumer expenditures:									
1975	48.0	35.6	23.3	18.2	8.6	5.9	4.1	23.3	167.0
1976	55.2	38.8	26.4	18.8	9.1	6.1	4.8	24.1	183.3
1977	59.0	40.8	27.8	18.1	9.6	6.3	4.4	24.9	190.9
1978	69.5	46.3	30.1	21.1	10.9	6.4	4.3	28.3	216.9
1979	80.2	52.5	33.5	23.8	12.6	7.8	4.8	30.1	245.3
1980	83.3	55.5	37.8	26.8	13.3	8.4	5.0	34.3	264.4
1981	86.6	62.8	41.4	29.0	14.7	8.9	5.2	39.1	287.7
1982	91.9	66.7	42.0	30.6	15.1	9.0	5.2	38.4	298.9
1983	97.9	70.0	45.0	31.0	16.3	9.6	5.4	39.8	315.0
1984	101.7	74.7	47.4	33.0	18.4	10.3	5.8	40.7	332.0
1985	103.2	78.5	49.4	34.6	19.9	10.9	6.1	42.8	345.4
1986	106.3	81.6	51.4	36.6	21.2	11.7	6.4	44.4	359.6
1987	109.9	85.7	54.0	38.9	23.3	12.0	6.7	46.6	377.1
Farm value:									
1975	20.6	8.4	10.0	3.0	4.1	1.1	2.2	6.2	55.6
1976	21.6	8.8	11.3	2.6	4.0	1.0	2.6	6.4	58.3
1977	22.0	8.6	11.5	2.3	4.2	.9	2.3	6.4	58.2
1978	28.0	10.0	12.7	2.8	5.1	1.0	2.2	7.7	69.5
1979	31.5	10.9	14.6	3.4	5.5	1.4	2.6	9.3	79.2
1980	30.8	11.7	16.0	3.5	5.9	1.6	2.5	9.8	81.7
1981	31.1	13.3	17.0	3.4	6.1	1.5	2.7	8.1	83.2
1982	31.5	13.8	16.7	3.4	6.0	1.4	2.5	8.4	83.7
1983	31.4	13.3	18.0	3.5	6.6	1.4	2.7	8.8	85.7
1984	32.4	15.1	18.1	3.7	8.0	1.4	3.0	9.7	91.4
1985	30.5	15.2	17.7	3.4	7.9	1.3	2.3	10.0	88.3
1986	30.9	14.9	17.8	2.9	9.0	1.1	2.5	10.0	89.1
1987	34.2	16.8	18.1	2.6	7.9	1.1	2.2	11.0	93.9

1/ Also includes soups, baby foods, condiments, dressings, spreads, and relishes. 2/ Includes flour, flour mixes, cereals, rice, and pasta. 3/ Includes fats and oils, sugar, tree nuts, peanuts, and miscellaneous foods.

Consumer expenditures for domestic farm foods have increased about $113 billion since 1980. About $101 billion of this increase consists of charges for marketing products after they leave the farm. Farm value has increased only $12 billion since 1980.

What the Marketing Bill Bought

Looking first at four broad functions that the food industry performs--processing, wholesaling, transporting, and retailing--and then at the specific cost items that add up to the marketing bill helps one get a clearer idea of what is represented by last year's marketing bill.

Costs of the functions performed are different for foods bought in foodstores than for meals and snacks purchased for consumption away from home (table 18). About 30 cents of each dollar spent in foodstores paid for the farm value in 1987. Thus, 70 cents paid the marketing bill.

For each dollar's worth of food bought in foodstores, 31 cents paid for processing. Between processor and retailer, another 10 cents was spent for wholesaling and 6 cents for intercity transportation. Finally, retailing

Table 18--Marketing function components of consumer expenditures

Expenditures and components	1981	1982	1983	1984	1985	1986	1987 1/
				Billion dollars			
Expenditures at foodstores	194.0	196.7	204.6	213.1	220.8	226.0	232.3
Farm value	66.6	65.9	66.8	70.7	68.1	67.8	69.7
Marketing bill	127.4	130.8	137.8	142.4	152.7	158.2	162.6
Processing cost	59.5	60.1	62.0	63.6	68.8	70.1	71.5
Intercity transportation cost	11.6	11.7	12.3	12.7	13.2	13.4	13.6
Wholesaling cost	17.5	19.7	20.5	21.3	22.1	22.5	23.8
Retailing cost	38.8	39.3	43.0	44.8	48.6	52.2	53.7
Expenditures for eating away from home	93.7	102.2	110.4	118.9	124.6	133.6	144.8
Farm value	16.6	17.8	18.9	20.7	20.2	21.3	24.2
Marketing bill	77.1	84.4	91.5	98.2	104.4	112.3	120.6
Processing cost	13.5	14.6	15.6	16.6	18.8	20.8	22.2
Intercity transportation cost	2.7	3.0	3.1	3.2	3.3	3.4	3.6
Wholesaling cost	5.3	5.9	6.6	7.1	7.5	8.0	8.5
Foodservice cost	55.6	60.9	66.2	71.3	74.8	80.1	86.3

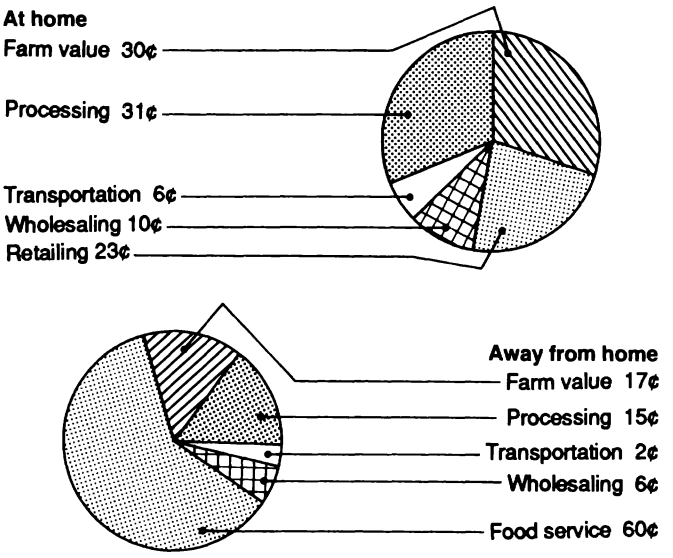
1/ Preliminary. Data for 1986 have been revised.

charges added the last 23 cents (fig. 5). These shares have been relatively constant over the years.

For dollars spent for food away from home, 17 cents covered the farm value. Processing costs accounted for 15 cents, transportation charges for 2 cents, and wholesaling for 6 cents. Thus, 60 cents was for food service (the preparing and serving of food eaten away from home).

The food processing and marketing industry is an important part of the American economy. The $283 billion the industry received from consumers in 1987 paid the wages and salaries of millions of employees and paid for all of the other costs of doing business.

Figure 5
Where the food dollar goes at home and away



1987 data.

Labor: The Largest Cost

Direct labor costs, the largest part of the marketing bill, amounted to about $131 billion in 1987, or 34.5 percent of food expenditures (fig. 6 and table 19). Labor costs consist of wages and salaries, and employee benefit costs such as group health insurance, estimated earnings of proprietors and family workers, and tips for food service. Direct labor costs do not include the costs of labor engaged in for-hire transporting of foods or in manufacturing and distributing supplies used by industries.

Labor costs rose 5.2 percent in 1987, due about equally to a rise in employment in the food industry and increases in employee compensation. Food retailing employment climbed about 2.7 percent, reflecting the continued growth of service departments, such as delicatessens, salad bars, and bakeries, in supermarkets. Employment rose about 2 percent in eating places and 1.5 percent in the food manufacturing industry. The total number of persons employed in the food industry rose about 2 percent in 1987. About 11.5 million workers were employed in processing and distributing food in 1987.

Nearly 6 million people were employed in away-from-home eating places. Foodstores employed 3 million people, while food processors employed 1.7 million, and food wholesalers about 0.7 million people.

Increases in worker compensation costs--wages, salaries, and employer costs for employee benefits--averaged 3.3 percent in private industry in 1987, based on data reported by the U.S. Department of Labor, about the same as in 1986. Compensation cost increases dropped steadily during 1982-86, but leveled off last year. Although compensation cost changes for the food industry are not reported separately, the rise was probably smaller than the industry average because of lower hourly earnings of workers in food retailing.

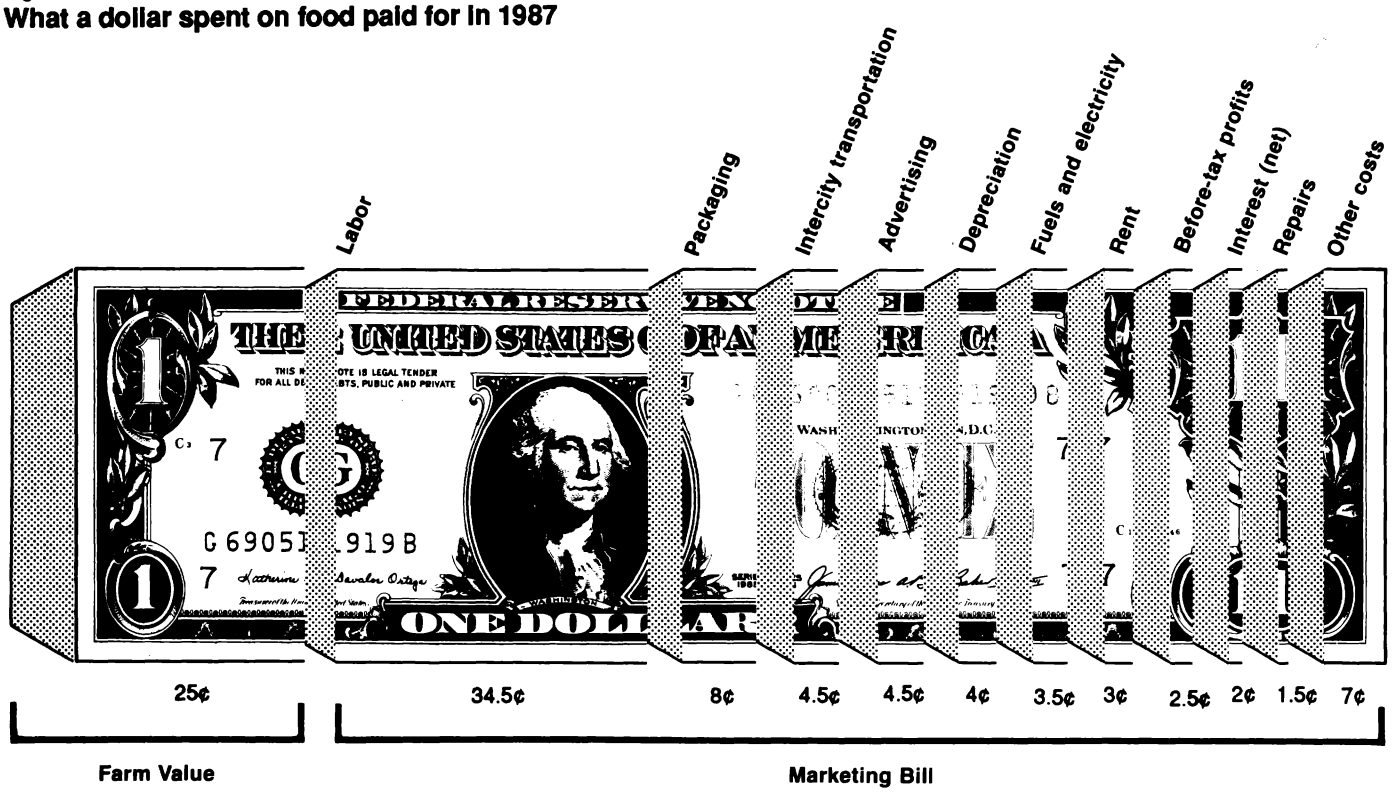
Table 19--Components of the marketing bill for domestically produced farm foods

Year	Labor 1/	Packaging materials	Intercity rail and truck transportation	Fuels and electricity	Corporate profits before taxes	Other 2/	Total marketing bill 3/
				Billion dollars			
1967	25.9	7.3	4.3	--	3.4	21.5	62.4
1968	28.0	7.6	4.5	--	3.6	22.2	65.9
1969	30.4	7.9	4.6	--	3.6	21.8	68.3
1970	32.2	8.2	5.2	2.2	3.6	23.7	75.1
1971	34.5	8.5	6.0	2.4	3.9	23.2	78.5
1972	36.6	8.9	6.1	2.5	4.0	24.3	82.4
1973	39.7	9.4	6.4	2.8	5.4	23.4	87.1
1974	44.3	11.8	7.5	3.7	6.1	24.8	98.2
1975	48.3	13.3	8.4	4.6	7.1	29.7	111.4
1976	53.8	14.5	9.1	5.0	7.7	34.9	125.0
1977	58.3	15.1	9.7	6.0	8.0	35.6	132.7
1978	66.2	16.6	10.5	7.1	10.3	36.7	147.4
1979	75.2	18.6	11.8	8.2	10.4	41.9	166.1
1980	81.5	21.0	13.0	9.0	10.2	48.0	182.7
1981	91.0	22.6	14.3	10.0	10.0	56.6	204.5
1982	96.6	23.7	14.7	11.0	9.6	59.6	215.2
1983	102.4	24.7	15.4	11.7	9.8	65.3	229.3
1984	109.3	26.2	15.9	12.5	9.7	66.8	240.6
1985	116.5	26.9	16.5	13.1	9.5	74.6	257.1
1986	124.2	27.7	16.8	13.3	9.3	79.3	270.5
1987	130.7	29.5	17.2	13.8	9.6	82.4	283.2

-- = Not available.

1/ Includes employee wages or salaries and their health and welfare benefits. Also includes estimated earnings of proprietors, partners, and family workers not receiving stated remuneration. 2/ Includes depreciation, rent, advertising and promotion, interest, taxes, licenses, insurance, professional services, local for-hire transportation, food service in schools, colleges, hospitals, and other institutions, and miscellaneous items. 1967-69 data also include fuels and electricity. 3/ The marketing bill is the difference between the farm value and consumer expenditures for these foods both at foodstores and away-from-home eating places. Thus, it covers processing, wholesaling, transportation, and retailing costs and profits. Some historical data were revised.

Figure 6
What a dollar spent on food paid for in 1987



Includes food at home and away from home. Other costs include property taxes and insurance, accounting and professional services, promotion, bad debts, and many miscellaneous items.

The costs of employee benefits have grown more rapidly than wages and salaries. The largest costs of benefits are Social Security and unemployment taxes and employer contributions to employee insurance and pension plans. These costs are referred to as supplements to wages and salaries in income statistics published by the U.S. Department of Commerce. For the food manufacturing industry, these supplements were about 19 percent of total labor cost in 1986 (the latest data available). Separate data for food retailing and wholesaling are not available, but the costs are probably similar since labor contracts provide comprehensive health and pension benefits for workers in food retailing and wholesaling.

Rising costs of employee benefits continued to boost food industry labor costs in 1987. However, the growth in these costs has slowed to about the same rate as that for wages and salaries, partly because of changes in labor agreements requiring employees to pay more of the cost of health plans, a slower rise in the maximum employer Social Security tax, and fewer increases in employee vacation and holiday benefits.

Packaging Costs

Food containers and packaging materials, the second largest food marketing cost, totaled $29.5 billion in 1987, about 8 percent of total food expenditures. Costs rose 6.5 percent over 1986, mainly reflecting higher costs for paperboard boxes and containers and the use of greater quantities of plastics and some other packaging materials by the food industry.

Paperboard boxes and containers are the largest packaging cost. The food industry spent nearly $12 billion, or about 40 percent of total packaging

expenses, on paper and paperboard products in 1987. Fiber (cardboard) boxes, the primary container used to ship nearly all processed foods, represented about a third of this total. Sanitary food containers, including those for such products as fluid milk, margarine and butter, ice cream, and frozen food, cost almost as much. The third-largest paperboard item was folding boxes used for such dry foods as cereals and perishable bakery products.

Metal containers are next in importance, making up about 25 percent of total food packaging costs. Cans have become less important for food packaging because of the increased popularity of glass and plastic bottles, the year-round availability of fresh fruits and vegetables, and the increased use of microwaveable dishes for frozen foods.

Costs of plastic containers and wrapping materials are nearly 15 percent of food packaging costs. Plastic is an important source of trays for meat and produce, bottles for milk and fruit juices, jars and tubs for cottage cheese and other dairy products, and flexible wrapping materials, such as polyethylene film, for protective covering of baked goods, meats, and produce.

Transportation Costs

Intercity truck and rail transportation costs for farm foods were about $17 billion in 1987, making up 4.5 percent of retail food expenditures. Larger marketings of fruits and vegetables and slightly higher truck rates boosted costs about 2 percent last year.

Transportation costs were held down by nearly stable rates. For the second year in succession, railroad freight rates declined by about 1 percent. Average truck rates for shipping food products modestly increased since operating truck costs rose about 2.5 percent.

Energy Costs

Last year's energy bill came to $13.8 billion, making up about 3.5 percent of retail food expenditures. The slight rise in 1987 was due mainly to the expanded size of the food industry. During 1973-82, fuel and electricity costs in the food industry rose at more than 1.5 times the annual rate of other costs reflecting the dramatic rise in energy prices. However, the overall rise in energy costs has been similar to other costs over the past 5 years, including 1987. Electric rates rose more slowly and natural gas prices declined.

This energy bill counted only the costs of electricity, natural gas, and other fuels used in food processing, wholesaling, and retailing, including food service at eating places. It excluded transportation fuel costs, except for those incurred for food wholesaling.

Public eating places and other foodservice facilities incur over a third of the fuel and electricity costs of food marketing. These energy expenses have risen because of the relatively large growth of the away-from-home food market. Also, away-from-home food service has the highest energy costs per dollar of sales, averaging about 3.8 percent.

Food retailing and processing each account for about 25 percent of food marketing fuel and electricity costs. Energy costs rose in relation to other retailing costs in the early 1980's but have leveled off at about 1.3 percent

the past several years. The major portion of the food retailing energy bill is electricity used to operate refrigeration equipment.

Other Costs Added Up

The major costs just discussed together accounted for 67.5 percent of the 1987 food marketing bill. The rest of the bill included a variety of other costs (29 percent of the total) and profits (about 3.5 percent).

Many relatively small costs were associated with food processing and marketing functions. Although most such costs individually were small, they added to $82 billion. These costs included depreciation, rent, advertising and promotion, repairs, bad debts, contributions, property taxes and insurance, interest, and the nonfood costs involved in providing food service in schools, hospitals, and other institutions. Some of these other costs are estimated using data from trade publications, the Internal Revenue Service, and the Bureau of the Census.

The largest of these costs are plant and equipment rent and depreciation (about 7 percent of total consumer expenditures), media--television, radio, and newspaper--advertising expenditures (about 4.5 percent of food expenditures), net interest (about 2 percent of expenditures), and repairs (1.5 percent of expenditures).

Sufficient data are not available for estimating many individual relatively small costs such as taxes and insurance, for-hire local truck transportation, professional services, and food service in schools and institutions. Together, these costs account for about 7 percent of the food dollar.

Corporate Profits

Before-tax profits earned by firms from marketing foods were estimated at $9.6 billion for 1987, only modestly higher than in 1986. The increase in profits was small despite strong food sales mainly because of the lower profit margin in food retailing. The profit estimate was made by multiplying sales by profit rates per dollar of sales for food retailers, wholesalers, manufacturers, and public eating places derived from data compiled by IRS from corporation income tax returns. Profits of the food industry last year were 2.5 percent of food spending.

FOOD SPENDING IN RELATION TO INCOME

Food spending has increased considerably over the years, but the increase has not matched the gain in disposable income. As a result, the percentage of income spent for food has declined (table 20). In 1929, the first year data of this type were recorded, 24 percent of disposable income was spent for food. This percentage has tapered off fractionally almost every year since then. By 1970, the percentage had dropped to 13.9 percent. During the 1970's, the percentage held fairly constant because of relatively high food price inflation. By 1980, it was still 13.6 percent. It has declined steadily since then to a low of 12.1 percent in 1987.

The decline in the percentage of income spent for food is the direct result of the "inelastic" nature of the aggregate demand for food. This phenomenon was noted in the 19th century by Ernst Engel. Engel observed that as income

Table 20--Food expenditures by families and individuals as a share of disposable personal income

Year	Disposable personal income	Expenditures for food			Proportion of income spent for food		
		At home 1/	Away from home 2/	Total	At home	Away from home	Total
	Billion dollars	Million dollars			Percent		
1929	81.7	16,918	2,617	19,535	20.7	3.2	23.9
1939	69.7	12,952	2,289	15,241	18.6	3.3	21.9
1949	187.9	33,774	7,775	41,549	18.0	4.1	22.1
1960	358.9	50,558	12,562	63,120	14.1	3.5	17.6
1961	373.8	51,069	13,100	64,169	13.7	3.5	17.2
1962	396.2	51,996	13,897	65,893	13.1	3.5	16.6
1963	415.8	52,374	14,546	66,920	12.6	3.5	16.1
1964	451.9	54,530	15,685	70,215	12.1	3.5	15.5
1965	486.8	57,382	16,946	74,328	11.8	3.5	15.3
1966	525.9	59,884	18,636	78,520	11.4	3.5	14.9
1967	562.1	60,254	19,776	80,030	10.7	3.5	14.2
1968	609.6	63,510	21,723	85,233	10.4	3.6	14.0
1969	656.7	67,956	23,362	91,318	10.3	3.6	13.9
1970	715.6	74,166	25,845	99,511	10.4	3.6	13.9
1971	776.8	78,074	26,922	104,996	10.1	3.5	13.5
1972	839.6	84,441	30,134	114,575	10.1	3.6	13.6
1973	949.8	93,133	33,483	126,616	9.8	3.5	13.3
1974	1,038.4	105,374	37,059	142,433	10.1	3.6	13.7
1975	1,142.8	115,087	44,056	159,143	10.1	3.9	13.9
1976	1,252.6	122,949	50,415	173,364	9.8	4.0	13.8
1977	1,379.3	131,616	56,143	187,759	9.5	4.1	13.6
1978	1,551.2	144,989	64,281	209,270	9.3	4.1	13.5
1979	1,729.3	161,692	73,700	235,392	9.4	4.3	13.6
1980	1,917.9	178,463	81,793	260,256	9.3	4.3	13.6
1981	2,127.6	190,317	89,858	280,175	8.9	4.2	13.2
1982	2,261.4	197,737	96,406	294,143	8.7	4.3	13.0
1983	2,428.1	208,385	105,824	314,209	8.6	4.4	12.9
1984	2,668.6	220,482	114,822	335,304	8.3	4.3	12.6
1985	2,838.7	229,859	122,411	352,270	8.1	4.3	12.4
1986	3,019.6	237,597	131,940	369,537	7.9	4.4	12.2
1987	3,209.7	245,628	142,565	388,193	7.7	4.4	12.1

1/ Food purchases from grocery stores and other retail outlets, including purchases with food stamps and food produced and consumed on farms, because the value of these foods is included in personal income. Excludes Government-donated foods. 2/ Purchases of meals and snacks by families and individuals, and food furnished employees because it is included in personal income. Excludes food paid for by government and business, such as donated foods to schools, meals in prisons and other institutions, and expense-account meals.

rises, the proportion of income spent for food declines. This decline occurs because expenditures for food require a large share of income when income is relatively low. But as income rises, the desire for nonfood items exceeds the desire for additional food. A decline in this percentage reflects a highly developed economy in which there is money to spend on personal services and other discretionary items. Some of these additional services ordinarily are purchased along with food. This reasoning largely explains the slight increase in the percentage of income spent on food away from home.

The percentage of income spent for food varies widely among households of different sizes and income. Data from the 1986 Consumer Expenditure Survey conducted by the U.S. Department of Labor showed that the percentage of after-tax income spent for food varied from 12.7 percent for households with incomes of $30,000-$39,999 to 27.4 percent for families with incomes of $5,000-$9,999.

The estimates of food expenditures in table 20, developed by ERS, differ from the U.S. Department of Commerce estimates of personal consumption expenditures (PCE) previously used to compute the percentage of disposible personal income (DPI) spent for food. The trend in food expenditures is similar, but the ERS series shows a lower level of spending for food than the PCE series, particularly for food consumed at home. The ERS estimate of at-home expenditures is lower partly because it excludes pet food, ice, and prepared feeds which are included in PCE estimates. ERS estimates also deduct more from grocery store sales for nonfoods, such as drugs and household supplies, in arriving at the estimate of food purchases for at-home consumption. 2/

FOOD PRICE HIGHLIGHTS

Higher prices for red meats and fresh fruits and vegetables contributed most to the rise in the CPI for food in 1987. Farm value also rose for meats and fruits and vegetables but declined for grain-based foods. The farm-to-retail price spread increased for most foods.

Choice Beef

Retail prices increased sharply in 1987 following a decline in prices during 1985 and 1986 (table 21). The 1987 weighted average price of Choice beef was $2.42 per pound, which matched the highest yearly average Choice beef retail price recorded in 1982. The 1987 price was almost 12 cents higher than in 1986. Prices varied during 1987 from a high of $2.49 per pound in June to a low of $2.34 in February and March. Prices of individual cuts ranged from an annual average of $1.31 per pound for ground beef to $4.35 per pound for porterhouse steak.

The farm value increased about 2 cents more than the retail price from 1986 to 1987. The farm value averaged 57 percent of the retail price of beef in 1987, up from 54 percent in 1986. The farm value is computed from the average of terminal and direct market prices for Choice steers, yield grade 3, in eight markets. Prices per pound of slaughter steers are multiplied by 2.4 pounds, the quantity of live animal required to sell 1 pound of Choice beef at retail. We then estimate the value of byproducts, principally the hide,

2/ Alden Manchester described the new ERS expenditure series in Developing an Integrated Information System for the Food Sector, AER-575, U.S. Dept. Agr., Econ. Res. Serv., Aug. 1987.

Table 21--Choice beef and pork: Retail price, farm value, and farm-to-retail price spread

Item	Retail price 1/	Net carcass value 2/	Net farm value 3/	Price spreads: Farm-to-retail	Price spreads: Carcass-retail 4/	Price spreads: Farm-carcass 5/	Farm value share 6/
	Cents per retail pound						Percent
Choice beef:							
1980	237.6	155.4	145.0	92.6	82.2	10.4	61
1981	238.7	149.3	138.5	100.2	89.4	10.8	58
1982	242.5	150.7	140.5	102.0	91.8	10.2	58
1983	238.1	145.4	136.2	101.9	92.7	9.2	57
1984	239.6	147.6	140.0	99.6	92.0	7.6	58
1985	232.6	135.2	126.8	105.8	97.4	8.4	55
1986	230.7	133.1	124.4	106.3	97.6	8.7	54
1987	242.5	145.3	137.9	104.6	97.2	7.4	57
Pork:							
1980	139.4	98.0	63.2	76.2	41.4	34.8	45
1981	152.4	106.7	70.3	82.1	45.7	36.4	46
1982	175.4	121.8	88.0	87.4	53.6	33.8	50
1983	169.8	108.9	76.5	93.3	60.9	32.4	45
1984	162.0	110.1	77.4	84.6	51.9	32.7	48
1985	162.0	101.1	71.4	90.6	60.9	29.7	44
1986	178.4	110.9	82.4	96.0	67.5	28.5	46
1987	188.4	113.0	82.7	105.7	75.4	30.3	44

1/ Composite of all cuts. 2/ For quantity equivalent to 1 retail pound: beef, 1.48 pounds of carcass beef; pork, 1.06 pounds of wholesale cuts. 3/ For quantity of live animal equivalent to 1 retail pound: beef, 2.4 pounds; and pork, 1.7 pounds, minus byproduct allowance. 4/ Includes retailing, meat fabricating, wholesaling, and intracity transportation. 5/ Charges for livestock processing and transporting of meat to city where consumed. 6/ Percentage of retail price.

obtained from the slaughtered animal. We subtract this byproduct value to obtain the farm value of the meat alone.

The farm-to-retail price spread for Choice beef last year declined slightly from 1986, averaging $1.05 a pound. The spread varied from a high of $1.11 in January to a low of $0.92 in May. The price spread for beef was relatively stable between 1981 and 1984 and did not keep pace with inflation. Thus, the 1985-87 spread averaged less than 5 percent higher than in 1981-84.

The spread pays for various beef processing and marketing functions. The slaughtering function, representing all of the activities performed from the time the packer purchased the cattle until the carcasses were shipped from the packing plant, cost 3.6 cents in 1987 (table 22). Many packers cut beef carcasses into primals, subprimals, and retail cuts, but the estimated spread for slaughtering assumes that the beef is sold in carcass form. The

Table 22--Choice beef and pork: Farm value, marketing costs by function, and retail price

Item	1983	1984	1985	1986	1987
		Cents per retail pound			
Beef:					
Farm value	136.2	140.0	126.8	124.4	137.9
Slaughtering	5.4	3.8	4.5	4.9	3.6
Intercity transportation	3.8	3.8	3.9	3.8	3.8
Warehousing and store delivery	15.7	15.8	15.3	15.2	16.0
Breaking carcass	11.4	11.8	12.3	12.5	13.0
Cutting and merchandising	65.6	64.4	69.8	69.9	68.2
Retail price	238.1	239.6	232.6	230.7	242.5
Pork:					
Farm value	76.5	77.4	71.4	82.4	82.7
Slaughtering and processing	28.9	29.1	26.1	25.0	26.8
Intercity transportation	3.5	3.6	3.6	3.5	3.5
Warehousing and store delivery	11.2	10.7	10.7	11.7	12.4
Cutting and merchandising	49.7	41.2	50.2	55.8	63.0
Retail price	169.8	162.0	162.0	178.4	188.4

slaughtering value is obtained by deducting the farm value and estimated transportation costs for the carcass (from the packer to the city where consumed) from an average wholesale value of Choice steer carcasses (600-700 pounds, yield grade 3). Thus, the estimate is derived from price differences and is not a compilation of costs. The lower slaughtering value since 1983 may reflect downward pressure on wages and gains in productivity in the meat packing industry.

Transportation of beef from the packer to the retail marketing area amounted to 3.8 cents per retail pound in 1987. Warehousing and store delivery were estimated at 16 cents per pound at retail. This estimate is based on data reported in the 1982 Census of Wholesale Trade, which indicated that these costs represented 8.3 percent of gross sales of meat wholesalers.

The spread for breaking the carcass into principal parts such as the loin and chuck, which could be done at the packing plant, at the wholesale level, or by the retailer, was estimated at 13 cents per pound in 1987. Cutting and retail merchandising of Choice beef cost 68 cents per pound in 1987. This amount represents the difference between the total of all other spreads and the retail price.

Data for 1983-87 indicate a slow upward trend in the spread for breaking the carcass and cutting and merchandising the beef. The increases reflect the effect of inflation on marketing costs. In contrast, slaughtering costs have varied considerably partly because of changes in byproduct values, an increasing shift to boxed beef, and to a different allocation of returns between the cutting and slaughtering functions. Changes in the quality, supply, and demand, and price reporting of carcass beef also may be affecting the carcass price series used in deriving the slaughtering spread.

Pork

Retail pork prices averaged $1.88 in 1987, 10 cents higher than in 1986 (table 21). Prices increased despite 2-percent larger pork supplies and total meat supplies. The farm value was about the same in 1987 as the year before, averaging 82.7 cents per retail pound equivalent. With the large increase in retail price, the farm value share declined to 44 percent from 46 percent of the retail price of pork.

Farm value is computed from the average price of barrows and gilts at seven midwestern markets. This price is then multiplied by 1.7 pounds, the quantity of live animal needed to sell 1 pound of pork at retail. A value for lard and other byproducts is subtracted to obtain the net farm value.

The farm-to-retail price spread for pork rose 10 cents to $1.06 per pound in 1987. Since a large decrease in the spread in 1984 when retail pork prices sharply declined, the spread has gone up 21 cents, accounting for most of the 26-cent rise in retail pork prices since 1984.

Among components of the farm-to-retail spread for pork, the slaughtering and processing functions amounted to 27 cents in 1987, 2 cents more than in 1986 (table 22). This spread represents charges for cutting the carcass into primals and processing hams, bacon, and other products. We estimated this spread by deducting the farm value and intercity transportation costs from a composite wholesale price of pork.

The transportation price spread for pork between the packer and retail marketing area was 3.5 cents per pound in 1987, unchanged from the previous year. The warehousing and store delivery spread was estimated at about 12 cents per retail pound in 1987, up only slightly from earlier years.

The cutting and retail merchandising price spread of about 63 cents made up the largest component of the farm-to-retail price spread for pork. This figure was 7 cents higher than in 1986 when this value increased about 6 cents. The retail cutting and merchandising component is derived as a residual between the total of all other functions and the retail price. The increase in this spread may be partly explained by the time lag between changes in farm, wholesale, and retail prices.

Broilers

Broiler prices fell at both the farm and retail levels in 1987, reflecting 9-percent larger supplies. Retail prices fell by 5 cents per pound which was nearly equal to the decline in farm value. Thus, there was little change in the marketing spread, which has been relatively stable since 1983 at about 36-38 cents per pound (table 23). The retailing margin has increased, but broiler processing costs declined. Processing costs last year were lower

Table 23--Broilers and eggs: Farm value, marketing costs by function, and retail price

Item	Farm value	Marketing functions: Assembly and procurement	Processing	Intercity transportation	Wholesaling	Retailing	Retail price
			Cents				
Broilers, ready-to-cook, whole (pound):							
1975	37.0	1.4	7.5	1.4	3.9	12.0	63.2
1976	32.6	1.1	7.8	1.3	3.7	13.2	59.7
1977	33.0	1.1	8.0	1.4	3.7	12.9	60.1
1978	37.2	1.0	8.7	1.4	3.8	14.4	66.5
1979	35.7	1.3	9.6	1.6	4.2	15.6	68.0
1980	38.8	1.4	9.8	1.7	4.3	16.0	72.0
1981	37.6	1.6	10.3	1.7	4.3	18.2	73.7
1982	35.9	1.6	10.4	1.7	4.3	17.7	71.6
1983	38.0	1.6	10.5	1.7	4.3	16.7	72.8
1984	43.9	1.6	10.8	1.7	4.4	19.0	81.0
1985	40.2	1.6	9.3	1.7	4.4	19.1	76.3
1986	46.3	1.6	9.1	1.7	4.4	20.4	83.5
1987	40.8	1.6	8.8	1.5	4.2	21.6	78.5
Eggs, Grade A, large (dozen):							
1975	50.8	1.2	9.3	1.5	3.7	10.5	77.0
1976	58.0	.9	9.6	1.4	3.5	11.5	84.9
1977	53.8	.9	10.3	1.5	3.5	12.3	82.3
1978	49.7	.9	10.5	1.6	3.4	12.4	78.5
1979	53.7	1.1	11.7	1.8	3.9	13.7	85.9
1980	51.0	1.2	12.4	1.9	4.1	13.8	84.4
1981	56.1	1.2	12.2	1.9	4.1	15.1	90.6
1982	53.1	1.2	12.2	1.9	4.1	16.0	88.5
1983	58.5	.8	11.6	1.7	3.5	16.0	92.1
1984	65.7	1.0	12.1	1.5	3.7	16.5	100.5
1985	52.0	1.0	11.0	1.5	3.7	11.2	80.4
1986	54.3	1.0	10.8	1.5	3.7	15.7	87.0
1987	48.0	1.0	10.5	1.3	3.7	13.7	78.2

because gains in efficiency have more than offset rising labor and other input costs.

Per capita consumption of broilers continued to climb to a new high of about 60 pounds in 1987, nearly 4 pounds more than in 1986. Broiler consumption has gone up an average of about 2 pounds per capita per year during the past decade, whereas red meat consumption has declined about 1.5 pounds per year. Total poultry meat consumption represented 36 percent of all meat consumed in the United States in 1987, up from 26 percent in 1977.

Much of the demand for broilers is for further processed products. Broiler producers are cutting chicken into parts, and most are further processing chicken into fillets, nuggets, and other value-added products according to buyers' specifications. The processor generally realizes a more favorable gross margin and increased volume. Most of these products are served through fast-food and institutional outlets, but considerable volumes of chicken parts are sold through retail stores for home consumption. These further processed products are not included in farm-to-retail price spread computations but represent a source of market strength that supported prices in 1987 while supplies rose.

Eggs

Larger per capita egg supplies caused egg prices to decline at both the farm and retail levels in 1987. Retail egg prices averaged 78 cents per dozen, 9 cents below 1986 and the lowest since 1975 (table 23). The farm value of eggs dropped over 6 cents per dozen. The price spread between farm value and retail price narrowed to 30 cents per dozen. As the price spread for most foods has risen, the price spread for eggs has been very stable the past decade, averaging about 32 cents per dozen. Nearly half of the spread is the retailer margin, 14 cents per dozen in 1987.

Fluid Milk

The retail price for a half-gallon of whole milk sold in stores averaged $1.14 in 1987, up about 2 cents from a year earlier when prices declined by a similar amount (table 24). Last year's price was only 2 percent higher than in 1981, a much smaller price rise than for most other foods. A modest decline in farm prices of milk coupled with a relatively small increase in the farm-to-retail price spread account for the price stability.

The farm value of a half-gallon of milk in 1987 was 56.1 cents, 1.3 cents higher than in 1986. The farm value represented 49 percent of the consumer's milk dollar in 1987, the same as the previous 2 years, but 4 percentage points lower than in the early 1980's.

Processing and wholesaling typically are performed by the same firm. The combined processing and wholesaling margin in 1987 was about 34 cents per half-gallon. The processor-distributor took 30 percent of the retail price in 1987, nearly the same as other years. The retailing margin was 18 cents per half-gallon in 1987, which represented 16 percent of the retail price, up from about 10 percent in 1980.

Fruits and Vegetables

Processing and marketing charges for selected fruits and vegetables (fresh potatoes, lettuce, oranges, frozen orange juice concentrate, and canned

Table 24--Fluid whole milk: Farm value, marketing costs by function, and retail price per half-gallon

Year	Farm value 1/	Marketing functions: Assembly and procurement 2/	Processing 3/	Wholesaling 3/	Retailing 4/	Retail price 5/
			Cents			
1974	40.9	2.7	10.7	13.6	8.9	76.8
1975	41.2	2.8	11.4	13.6	7.9	76.9
1976	46.2	2.8	10.6	12.1	9.3	81.0
1977	45.1	2.9	13.2	12.6	8.3	82.1
1978	47.0	3.1	14.6	14.3	7.1	86.1
1979	52.2	3.8	15.1	16.6	8.3	96.0
1980	55.8	4.5	15.6	18.9	10.2	104.9
1981	59.5	4.7	16.0	19.1	12.4	111.7
1982	59.2	4.5	16.5	19.3	13.0	112.4
1983	59.5	4.3	15.8	17.5	15.7	112.8
1984	58.2	4.4	16.7	16.6	16.8	112.7
1985	56.1	4.8	17.9	16.8	17.8	113.4
1986	54.8	4.7	18.4	18.1	15.4	111.4
1987	56.1	4.9	17.4	17.0	18.3	113.7

1/ Prices received by farmers are normally quoted for 3.5-percent butterfat at plant of first receipt. This price has been adjusted for transportation from farm to first plant to get the farm price, then adjusted to get the value of milk containing 3.3-percent butterfat, the usual butterfat content at retail. There are approximately 23.2 half-gallons of milk per 100 pounds. 2/ Nonfarm costs of supplying milk to processors, including laboratory and onfarm field service to assure quality, pickup at farms, transportation, receiving and reloading as necessary, and management of raw milk reserves. 3/ Data for processing and wholesaling represent costs for 30 fluid milk processor-distributor firms that are representative of moderate-size, single-plant operations throughout the country. Very small plants and plants operated by retail food chains are not included. 4/ May include some wholesaling formerly performed by processors. 5/ Average of Bureau of Labor Statistics monthly prices.

tomatoes) help explain increases in price spreads and, therefore, retail prices over the years (table 25).

Retailing accounts for the largest share of the marketing expense for the fresh produce items (potatoes, oranges, and lettuce). Retailing expenses for oranges averaged 46 percent of the farm-to-retail spread during 1983-87. The retailing share averaged 61 percent for lettuce and 71 percent for potatoes. The fact that fresh produce sales per square foot of display space are below the average for the store and the fact that retailers experience a certain percentage of spoiling loss with fresh produce contribute to the comparatively high retailing expense. The retailing component for frozen concentrated orange juice and

Table 25--Selected fruits and vegetables: Farm value, marketing spread by function, and retail price

Food item and year	Farm value 1/	Marketing function: Packing or processing	Intercity transportation 2/	Wholesaling	Retailing	Retail price 3/
			Cents			
Potatoes, Northeast, round white (10-lb bag):						
1982	4/ 47.7	19.8	10.5	8.1	95.1	5/ 181.2
1983	4/ 55.7	15.5	8.3	6.4	74.4	5/ 160.2
1984	4/ 67.8	18.2	9.7	7.5	87.6	5/ 190.9
1985	4/ 37.0	18.2	9.7	7.5	87.8	5/ 160.3
1986	4/ 50.0	15.7	8.4	6.4	75.3	5/ 155.8
1987	4/ 61.9	26.3	14.0	10.8	126.5	5/ 239.5
Oranges, California (pound):						
1982	17.1	6/ 4.0	5.2	5.5	15.8	47.6
1983	5.3	6/ 8.6	5.2	5.9	13.7	38.7
1984	17.2	6/ 5.8	5.4	4.9	16.6	49.9
1985	12.4	6/ 9.4	5.4	6.8	19.4	53.4
1986	8.2	6/ 9.9	5.7	6.0	7.8	47.6
1987	10.0	6/ 9.9	6.2	9.0	19.9	55.0
Iceberg lettuce, California (pound):						
1982	7/ 7.4	8/ 7.5	5.7	5.2	30.4	56.2
1983	7/ 5.8	8/ 7.5	5.7	5.3	31.2	55.5
1984	7/ 4.0	8/ 7.5	5.7	4.4	28.8	50.4
1985	7/ 7.1	8/ 7.5	5.6	5.1	27.3	52.6
1986	7/ 5.8	8/ 7.7	6.0	6.1	28.3	53.9
1987	7/ 10.1	8/ 7.7	6.4	4.6	30.7	59.5
Orange juice, frozen (12-oz can):						
1982	46.3	18.7	3.4	13.6	24.1	9/ 106.1
1983	44.0	20.1	3.5	13.3	23.5	9/ 104.4
1984	49.0	32.7	3.5	13.2	23.2	9/ 121.6
1985 10/	61.9	18.5	3.5	17.2	30.5	9/ 131.6
1986 10/	39.4	23.2	3.8	14.6	25.9	9/ 107.1
1987 11/	41.6	30.5	3.9	12.7	22.6	9/ 111.3
Tomatoes, California (303 can):						
1982	4.9	37.2	5.0	1.5	6.4	55.0
1983	5.1	30.5	5.1	2.3	9.6	52.6
1984	4.9	29.6	5.2	2.4	10.4	52.5
1985	4.9	29.3	5.3	2.3	9.7	51.5
1986	4.8	27.7	5.3	2.6	11.0	51.4
1987	4.7	29.9	5.4	2.0	8.7	50.7

1/ Payment for the quantity of farm product equivalent to the retail unit minus imputed value of byproducts computed from average grower prices. 2/ Costs are for truck shipment. 3/ U.S. average retail prices except as noted. Prices of fresh produce weighted by quantities marketed. 4/ Prices include some packing costs since many growers may grade, wash, and bag potatoes. 5/ Selected eastern markets. 6/ Includes picking costs. 7/ Value in the field. 8/ Contract price for cutting, packing, hauling, cooling, and selling. 9/ Estimated by Florida Citrus Com. 10/ Revised. 11/ Preliminary.

canned tomatoes averaged 37 and 21 percent, respectively, of the farm-to-retail price spread.

Over the past 5 years, packing costs made up the second largest share of the price spread for the fresh produce items, averaging 16 percent for lettuce and potatoes and 23 percent of the farm-to-retail price spread for oranges. Intercity transportation costs were the third largest share, accounting for 10 percent of the price spread for lettuce and potatoes. For oranges, wholesaling was third largest at 17 percent.

In 1987, a substantial increase in the farm-to-retail spread, mainly the retailing component, raised the retail price of potatoes to the highest level since 1981. Higher charges for marketing also raised retail orange prices in 1987. In contrast, a sharp increase in farm value accounted for most of the rise in the retail price of lettuce.

Processing charges for canned tomatoes make up over 60 percent of the farm-to-retail price spread. A principal component of the processing spread is packaging: the metal can, the label, and the shipping case. Because processing charges were relatively stable during 1983-87, retail canned tomato prices changed very little.

The retail price of a 12-ounce can of frozen concentrated orange juice increased 4 cents to $1.11 in 1987. The farmers' return increased 2 cents. The processor share rose 7 cents to 30 cents. Charges for processing and retailing each made up 37 percent of the farm-to-retail price spread the past 5 years, wholesaling charges about 21 percent, and transportation costs about 5 percent. Packaging represents the largest cost of processing. Automated operations minimize the labor cost of concentrated orange juice processing.

Bread

The average retail price of white pan bread in 1987 was 54.7 cents per pound, about 2 cents lower than in 1986 (table 26). This price is the average of monthly prices reported by the Bureau of Labor Statistics.

The farm value of wheat, at 3.3 cents, was 0.2 cent lower than in 1986. The farm value represents the payment to farmers for the quantity of wheat (approximately 0.86 pound) required to produce the flour for a 1-pound loaf of bread. The payment is computed from the average farm price for all wheat. A deduction is made for the value of millfeed, a byproduct of milling the wheat. The value of the millfeed ranges from 15 to 20 percent of the value of the wheat, depending on the flour milling extraction rate, the price of flour, and the price of millfeed.

Other farm-derived ingredients, including lard, soybean oil, high-fructose corn syrup, and soy-whey blend, contributed 0.5 cent to a total farm value of 3.8 cents. Farm value of ingredients was 7 percent of the retail price of bread in 1987, unchanged from 1986. Thus, the farm-to-retail spread--consisting of wheat milling, bread baking, and distribution costs--was nearly all of the retail bread price.

Sugar

Because of the stability provided by the price-support program for sugar, retail sugar prices, together with the farm value and price spreads, changed

Table 26--White bread: Retail price, farm value of ingredients, farm-to-retail price spread, and farm value share of retail price per 1-pound loaf

Year	Retail price	Farm value			Farm-to-retail price spread	Farm value share	
		Wheat 1/	Other farm ingredients 2/	All ingredients		Wheat	All ingredients
	Cents					Percent	
1970	27.7	2.6	0.8	3.4	24.3	9	12
1971	28.5	2.6	.9	3.5	25.0	9	12
1972	28.2	2.9	.9	3.8	24.4	10	13
1973	31.5	4.1	1.4	5.5	26.0	13	17
1974	39.3	5.4	2.5	7.9	31.4	14	20
1975	41.0	4.5	2.3	6.8	34.2	11	17
1976	40.2	3.8	1.7	5.5	34.7	9	14
1977	40.5	2.7	.7	3.4	37.1	7	8
1978	41.7	3.3	.7	4.0	37.7	8	10
1979	46.7	4.1	.8	4.9	41.8	9	10
1980	50.9	4.5	.8	5.3	45.6	9	10
1981	52.5	4.7	.8	5.5	47.0	9	10
1982	53.2	4.4	.6	5.0	48.2	8	9
1983	54.2	4.5	.7	5.2	49.0	8	9
1984	54.1	4.3	.8	5.1	49.0	8	9
1985	55.3	4.1	.7	4.8	50.5	7	9
1986	56.5	3.5	.5	4.1	52.5	6	7
1987	54.7	3.3	.5	3.8	50.9	6	7

1/ Payment to farmers for the quantity of wheat (approximately 0.86 pound) required to produce the flour for a 1-pound loaf of white bread, minus the value of millfeed byproducts. Based on average farm prices for hard winter and spring wheat in 11 States producing these wheats through 1982; all wheat prices used beginning in 1983. 2/ Value for lard, shortening, granulated sugar, and nonfat dry milk through 1976. Value for 1977 forward is for lard, soybean oil, high-fructose corn syrup, corn syrup, and soy-whey blend.

very little in crop year 1986/87. The domestic raw sugar price, which is the basis for pricing all domestic sugar, increased about 1 cent per pound. This increase resulted in a slightly higher farm value. However, price spreads narrowed because of an increase in competitive pricing between refined beet and cane sugar.

The 1986/87 farm value of a pound of sugar was 13.6 cents, slightly higher than a year earlier (table 27). The farm value is based on the season average prices received by growers in the United States for sugarcane and sugar beets. In 1986/87, the farm value accounted for 40 percent of the retail price of sugar, up 1 percentage point from the previous year.

The farm-to-retail price spread was 20 cents in 1986/87, down about 1 cent from the previous year. The processing and refining component of the spread

Table 27--Sugar: Farm value, price spreads, and retail price

Item	Crop year beginning October					
	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87
	Cents per pound					
Farm value 1/	12.2	13.8	14.3	13.4	13.3	13.6
Processing and refining spread 2/	14.8	16.9	16.8	15.9	14.6	14.4
Wholesaling and retailing spread 3/	5.7	4.2	4.2	5.5	6.1	5.6
Retail price 4/	32.7	34.9	35.3	34.8	34.0	33.6

1/ Based on season average prices received by continental U.S. sugar producers of sugarcane in Louisiana and Florida and for all sugar beets. 2/ Difference between the farm value and an average of effective wholesale prices. 3/ Difference between the retail price and the wholesale price. 4/ Average of Bureau of Labor Statistics' monthly retail prices for sugar sold in 33-80-ounce packages.

amounted to about 14 cents, virtually unchanged from the previous year. This spread is the difference between the farm value and an average effective wholesale price for sugar packed in 5-pound bags. This spread covers all the functions of transporting sugarcane and sugar beets to processing plants, processing sugarcane and refining raw cane sugar, processing sugar beets, and selling sugar to buyers.

The wholesaling and retailing spread in 1986/87 was estimated to be 5.6 cents per pound, down 0.5 cent from the previous year. This spread is the difference between the average retail price and average wholesale price for sugar. It includes intercity transportation and wholesaling and retailing charges.

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